MARCH, 1959 • 35c

AMERICAN

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- TV News—Market for Free-Lancers
- How Old Nitrate Films Are Restored
- Filming "They Came To Cordura"
- The Mitchell Camera

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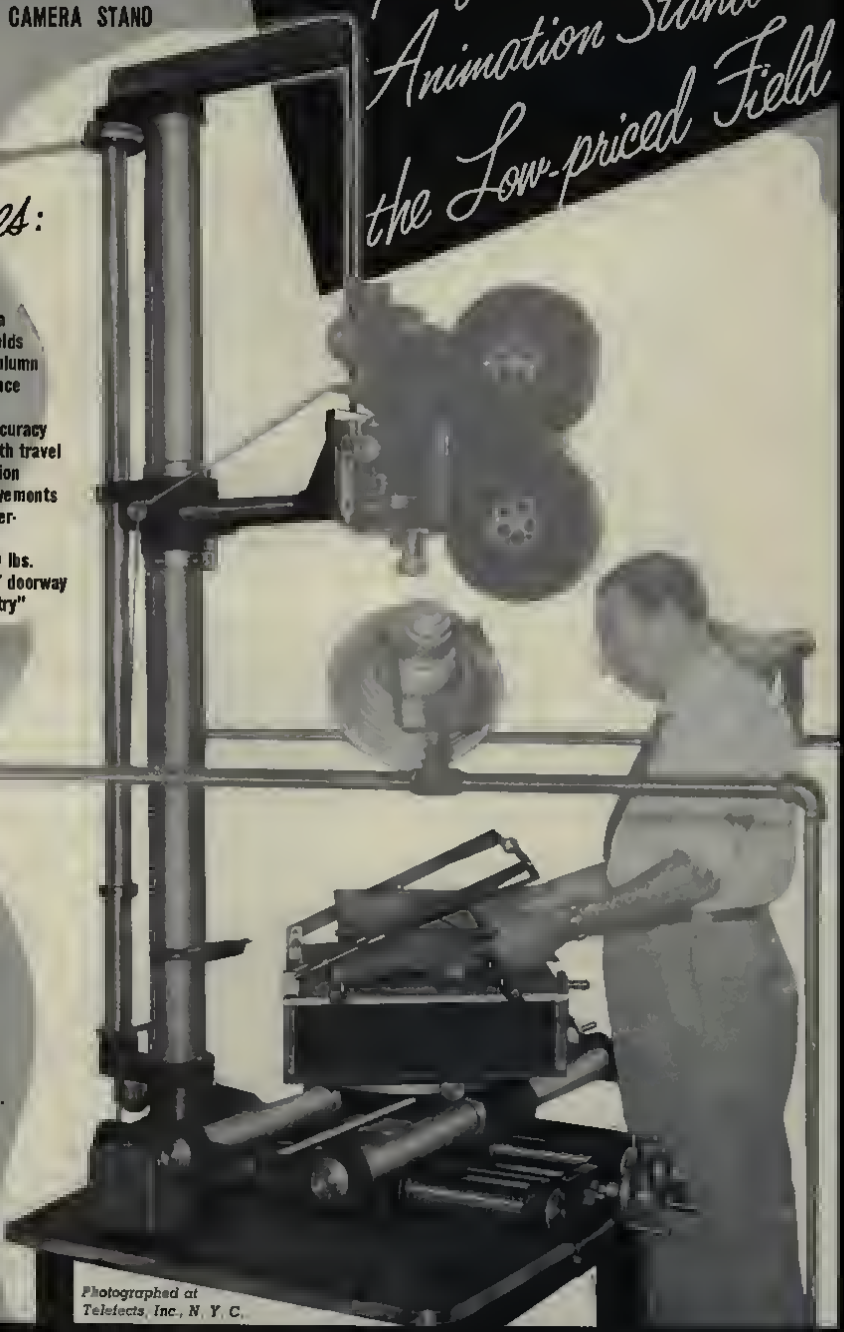

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Cinematographer

March, 1959 • Vol. 40, No. 3

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ON THE COVER

COLUMBIA PICTURES camera crew watches rehearsal of scene for "They Came To Cardura" on location near St George, Utah On the Mitchell camera is new Panatar lens used for the Cinemo Scope Eastmancolor production Camera dolly was especially designed with flanged rubber tired wheels enabling it to travel on wide gauge railroad track Grouped around camera from left, are Director Robert Rossen (white cap), Cinematographer Burnett Guffey ASC Jim Saper, assistant cameraman, operator Andy McIntyre (standing above Saper), Walter Mains (far right) and Gene Lenair (center foreground) Story about the photography of Cardura appears in this issue

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NOT AN INTERIOR IN THE PICTURE! 166
Cinematographer Burnett Guffey, ASC, photographed "They Came To Cordura" entirely out of doors

TV NEWS—GROWING MARKET FOR FREE LANCE CINEMATOGRAPHERS 169
Television is demanding increasing amounts of on-the-spot footage for its newscasts, and aspiring young motion picture cameramen are supplying it.

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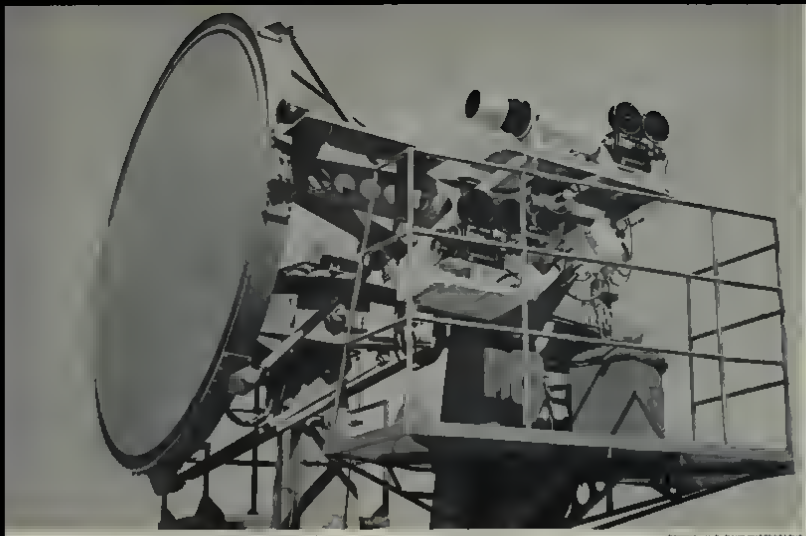

Mitchell Camera installation for radar tracking studies.

HOW MITCHELL CAMERAS SUPPLY VARIED DATA IN ROCKETS AND MISSILES DEVELOPMENT

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Data dial instrumentation by Mitchell camera.

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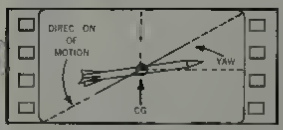
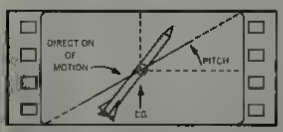
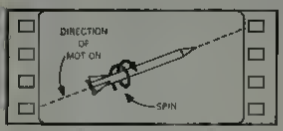


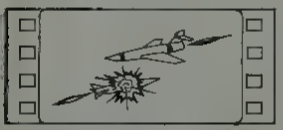
Yaw—Side-to-side motion of missile.



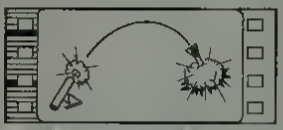
Pitch—Up-and-down motion of missile



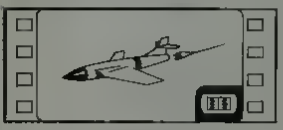
Roll—Turning motion of missile



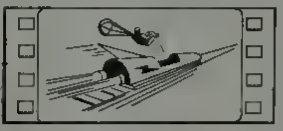
Miss Distance—Gap between missile and target at point of interception.



Flight Time—A series of lines on film, timed to accuracy of 1 millisecond



Position Data—Target location with azimuth and elevation readings



Pictorial Record—Record of all visible actions during test.

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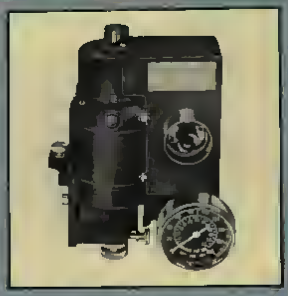

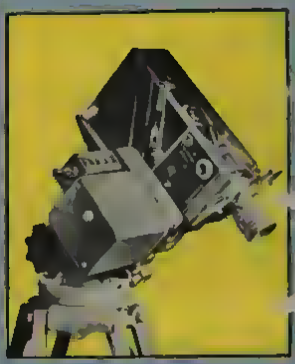

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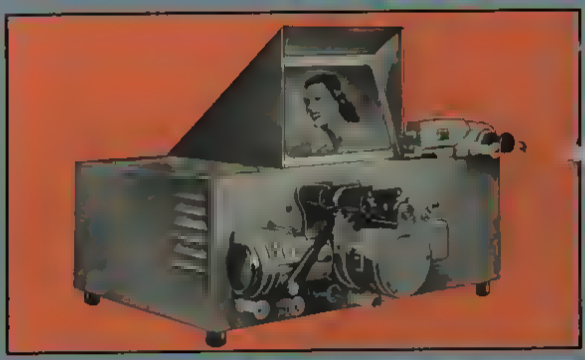

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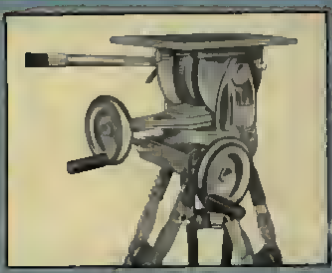

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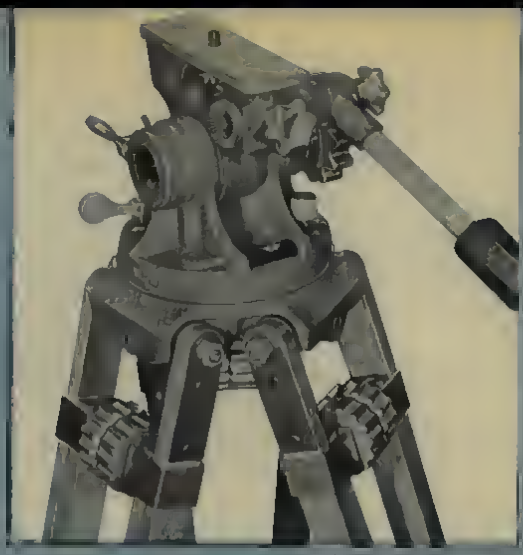

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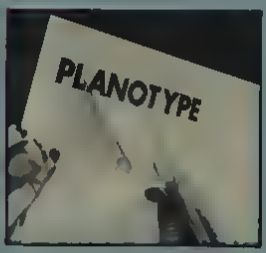

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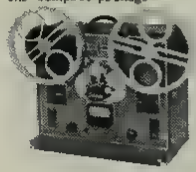

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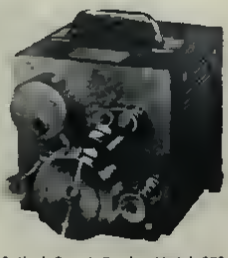

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ARRI

says Jock Pointer, A.S.C.
Chief Photographer, Movietonews, Inc.

"I've travelled many times all over the world with my Arriflex 35, and have used it under the most trying conditions. It has never failed me," says the globe-girdling chief cameraman whose Fox Movietone newsreels are shown both here and abroad.

"Arriflex 35 was with me when I shot the Cinemascope color short about the 'A Bomb' called 'Survival City'. Travelogues and documentary pictures—in Cinemascope or 'plain'—both in foreign countries and in the United States were taken with my Arriflex 35. Arriflex was the only camera we had with us—no others could have done the job as well!

"Because it is a reflex camera, the Arriflex 35 has resolved our photographic problems. With an Arriflex 35 you know what you're getting."

Photograph shows Jack Pointer, a veteran of 39 years of service with Movietone News, Inc. shooting a street scene with his Arriflex and Pan-Cinor model 150 varifocal lens.

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47mm TH Cooke f3.3 — 45 00
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50mm Eymax f2 8 — 49 50
50mm Wollensak f1.5 — 79 50
50mm Kinar f2 3 — 69 50
75mm Zeiss Tessar f2 8 — 49 50
75mm Ilex Cinemat f2 9 — 49 50
75mm T H Cooke f2 5 — 69 50
75mm Baltar f2 3 — 125 00
3¾" T H Cooke f3 3 — 49 50
100mm Miltar T2 2, new — 129 50
100mm Baltar f2 3 — 129 50
100mm Cinemat f2 9 — 49 50
100mm Astro Pan Tachar f2 3 — 49 50
6" Eymax f4 5 — 49 50
6" Seminat f3 5 — 49 50
6" Cooke Telekinic f4 5 — 49 50
6" Baltar f2 7 — 145 00
10.5cm Tiopian Garlitz f3 — 45 00
10" Eymax f4 5 — 49 50
11" T H Cooke f5 6 — 59 50
12" Dallmeyer f5 6 — 95 00

35mm CAMERAS

Arriflex model I, 3 lenses 2 200' mags, motor, sunshade case used excellent condition — $ 745.00

Arriflex model II, 3 Schneider lenses, 2 400' mags, motor, sunshade, case, battery, charger, exceptionally fine condition, value over $2 800 00, specially reduced to — 1,695 00

Arriflex blimp with 220 volt synchronous motor, 110 volt transformer, like new, list $2,025 00, special — 1,650 00

Cineflex reflex camera, 2 lenses, 2 200' mags, motor, case, excellent — 395 00

Zeiss Hi-Speed 35mm camera, up to 2000 fps 10 Praxar lenses, ideal for industrial or scientific work — 195 00

Mitchell 35mm Standard camera, 2 1000' mags, motor, sunshade viewfinder, 40, 50, 75mm lenses, tripod all cases, first class operating condition, value over $7,000 Special — 3,995 00

Fearless Blimp w/follow focus controls for Mitchell Standard, soundproof, terrific value, special — 395 00

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16mm CAMERAS

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Moviola model UDS 35mm picture on late type conversion 3x4 screen, separate 35mm optical-magnetic sound, cabinet, amplifier, speaker, with take-ups, exceptionally fine condition, special — 1,095.00

Moviola synchronizers	List	Special
2/35mm	$120 00	$69 50
3/35mm	145 00	79.50
2/16 2/35mm combination	245.00	99.50

Moviola 35mm optical sound reader w/amplifier & speaker, used, excellent, specially reduced to — 49.50

EDITING EQUIPMENT

Neemade synchronizers	List	Special
2/35mm	$160 00	$69 50
3/35mm	190 00	79 50
1/16 1/35mm comb	175 00	79 50
2/16 1/35mm comb	195 00	89 50

Synchremester 4/35mm synchronizer exceptionally fine, list $260 00 special — 119 50

English special model 4/35mm synchronizer, value $195 00, like new, special — 99 50

Hollywood automatic 35mm mylar tape splicer, list $195 00 demonstrator, specially reduced to — 145 00

EDITING TABLES

Porcelain top, overhead light, 72x34x31 value $175.00, special — $ 99 50

Porcelain top, 2 drawers, 42x28x36 value $75 00, special — 39 50

Metal top, 2 drawers, 60x20x36, value $85 00, special — 49 50

Ace 35mm rotary viewer with footage counter and image erector, list $265 00 ideal for viewing negative used, exceptionally fine condition — 195 00

PROJECTION EQUIPMENT

Bell & Howell Filmosound 385B latest model separate 12" speaker, like new list $579 95, special — $ 425 00

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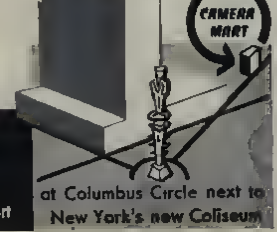

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HOLLYWOOD BULLETIN BOARD

ROLE OF CINEMATOGRAPHER in video tape production of TV entertainment was subject of discussion at February meeting of the ASC with leaders of Labor and TV industry on hand to air their views. At rostrum in photo above left, is ABC Proxy Walter Strenge. Others, from left are Richard Walsh, Pres. of IATSE, Fenton Coe, Dir. of Film Prodn. NBC Oscar Wick, Recording Supervisor NBC and Joy Raschen head of IATSE a east coast local in photo at right are, from left, Ed Benham, Chief Engineer, KTTV, Arthur Edeson ASC, Dick Moore, Pres. KTTV, Nick Welsch (in back at mike stand), NBC TV Network Prodn. Dir., and Jack Kennedy, NBC standing.

Recognizing the growing importance of video tape recording in the business of producing program material for television, and its potential impact on the future of Hollywood's directors of photography, American Society of Cinematographers last month invited leaders of Labor and important west coast TV engineers to discuss the subject before its members assembled at the Society's monthly dinner.

IATSE President Richard Walsh said no one in the industry should underestimate the potentials of tape, that it presents problems for all—cameramen, film editors, and the laboratories alike. He saw the film laboratories ultimately producing VTR "prints," same as they produce motion picture film prints now.

Black-and white VTR techniques are pretty well advanced, now, said NBC's Oscar Wick, who pointed out they still are restricted to playing back color video tapes on the same machine on which the tapes are recorded.

Hal Mohr, ASC, urged every cinematographer to learn all he can about VTR and especially what will be required of him to put quality pictures on tape. "What we have to offer VTR is the same thing we have given to films," he concluded.

• • •

The ASC's February meeting will honor its Honorary Member William J. German, President of the company that bears his name and which distributes nationally Eastman professional motion picture films.

At the same time the Society will honor seventeen of its members by presenting them with 25-year gold membership cards. They are Lucien Ballard, Charles Boyle, J. Burgi Contner, Floyd Crosby, Ray Fernstrom, Loyal Griggs, Charles Harten, W. Wallace Kelley, Lloyd Knechtel, Rudy Mate, Ted McCord, Irmin Roberts, Joseph Ruttenberg, William Snyder, William Steiner, Walter Strenge, and Robert Tobey.

• • •

Sam Leavitt, ASC, has been signed by Otto Preminger to direct the photography of "Anatomy Of A Murder," which Preminger will produce and direct for Columbia Pictures. Shooting starts on Michigan locations March 23rd.

• • •

Roy Rennahan, ASC, was among the winners of awards bestowed by the Los Angeles Art Directors Club last month. Award was for "Best Photograph"—that which graces cover of Warner Brothers Records' album of "For Whom The Bell Tolls," for which Art Director David Rose was also cited. Album cover photo is blowup of closeup in color of Ingrid Bergman which Rennahan had photographed for the film production of "For Whom The Bell Tolls."

• • •

The ten motion pictures nominated by members of the Academy of Motion Picture Arts and Sciences for awards for Best Achievement in Photography for 1958, have been announced by the Academy. Of the ten, five are black-and white and five are color. Titles and names of men who photographed them are:

Black and white: "The Defiant Ones," by Sam Leavitt, ASC; "Desire Under the Elms," by Dan Fapp, ASC, "I Want To Live," by Lionel Lindon, ASC, "Separate Tables," by Chas. Lang, ASC, "The Young Lions," by Joe Mac Donald, ASC.

Color: "Auntie Mame," by Harry Stradling, ASC, "Cat On A Hot Tin Roof," by Wm. Daniels, ASC, "Gigi," by Joe Ruttenberg, ASC; "Old Man And The Sea," by James Wong Howe, ASC, "South Pacific," by Leon Shamroy, ASC. ■

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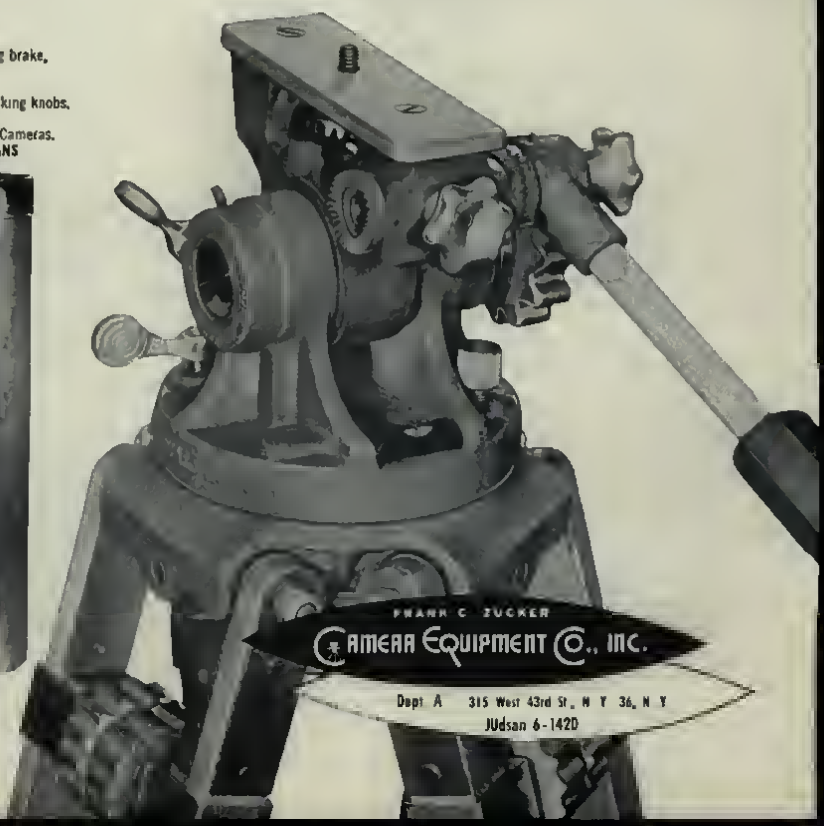

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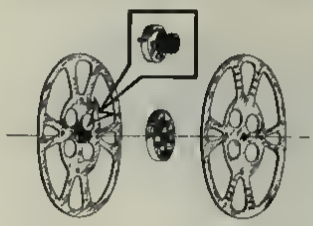

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Meet Dom Notto

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Maurer 16mm camera, 3 ek rars sync motor, 2 400 ft mags, matbox, finder cases all in excellent condition **$1975.00**

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PHOTOGRAPHIC ASSIGNMENTS

WHAT THE INDUSTRY'S CAMERAMEN WERE SHOOTING LAST MONTH

ASTERISKS INDICATE TELEVISION FILMS

ALLIED ARTISTS

WINTON HOCH, ASC, "The Big Circus" (CScope & Technicolor, Saratoga Prods.) with Victor Mature and Rhonda Fleming Joseph Newman, director

KARL STRUSS, ASC, "Beatsville" with Gregg Palmer and Kathleen Crowley Gene Fowler, Jr., director.

AMERICAN NATIONAL

JACK MARQUETTE, BOO HOFFMAN, "Mac Kenzie's Raiders"* (Ziv-TV) with Richard Carlson

CHARLES VAN ENGER, ASC, MONROE ASKINS RICHARD RAWLINGS, "Bat Masterson"* (Ziv TV) with Gene Barry.

STANLEY HORSLEY, ASC, "World of Giants"* (Ziv-TV) Jerry Juren, director.

RICHARD RAWLINGS, CURT FETTERS MONROE ASKINS, "Highway Patrol"* (Ziv TV) with Broderick Crawford.

ROGER SHEARMAN, MONROE ASKINS, BOB HOFFMAN, CURT FETTERS, "Rough Riders"* (Ziv TV) with Keat Taylor

CURT FETTERS, "Bold Venture"* (Ziv-TV) with Dane Clark; Commercials* (Ziv TV)

BOB HOFFMAN, MONROE ASKINS, "Tombstone Territory"* (Ziv TV) with Pat Conway

LLOYD KNECHTEL, ASC, Commercials* (Ziv-TV).

ROGER SHEARMAN, Commercials* (Ziv-TV).

MONROE ASKINS, Commercials* (Ziv-TV).

CASCADE PICTURES

ELWOOD BREDELL, ASC, Commercials*

ELLIS CARTER, ASC, Commercials*.

WILLIAM SKALL, ASC, Commercials*.

COLUMBIA

JOSEPH BRUN, ASC, "Middle of the Night" (Shooting in N.Y.) with Kim Novak and Fredric March, Delbert Mann, director.

IRVING LIPPMAN, FRED JACKMAN, JR. "Alcoa Goodyear Theatre"* (Screen Gems).

JAMES WONG HOWE, ASC, "The Last Angry Man" (Fred Kohlmar Prod.; shooting in N.Y.) with Paul Muni and Betsy Palmer Daniel Mann, director

FRED GATELY, ASC, "Father Knows Best"* (Screen Gems) with Robert Young and Jane Wyatt. Peter Tewksbury, director.

GERT ANDERSON, ASC, "Donna Reed Show"* (Screen Gems) with Donna Reed Oscar Rudolph, director.

HENRY FREULICH, ASC, IRVING LIPPMAN, "Behind Closed Doors"* (Screen Gems)

J. BURGI CONTNER, ASC, "Naked City"* (shooting in N.Y.)

TED MOORE, "Adamson in Africa" (C'Scope & Color, Warwick Prod., shooting in Africa) with Robert Taylor Richard Thorpe, director.

SAM LEAVITT, ASC, "The Crimson Kimona" (Globe Ent.) with Victoria Shaw and James Shigeta Samuel Fuller, director

FRED JACKMAN, JR., "Night Stick"* (Screen Gems) James Nielson, director.

WALT DISNEY

GORDON AVIL, ASC, "Zorro"* with Guy Williams

FILMCRAFT STUDIOS

VIRGIL MILLER, ASC, "You Bet Your Life"* with Groucho Marx Robert Dwan, director.

FOX WESTERN AVENUE

FRANK REDMAN, ASC, "The Perry Mason Show"* with Raymond Burr.

GEORGE DISKANT, ASC, "Dick Powell's Zane Grey Theatre"* (Four Star Prods.) with Dick Powell. "The Riffleman"* (Four Star Prods.) with Chuck Connors

GUY ROE, ASC, "Wanted Dead or Alive"* (Four Star Prods.) with Steve McQueen, "Trackdown"* (Four Star Prods.) with Robert Culp.

CHARLES BURKE, "Black Saddle"* (Four Star Prods.) with Peter Breck.

JOSEPH BIROC, ASC, "Captain of Detectives"* (Pilot, Four Star Prods.) Commercials* (Four Star Prods.)

GENERAL SERVICE

HAL MOHR, ASC, Commercials* (Filmways Prods.)

HARRY WILD, ASC, "The Bob Cummings Show"* (Laurmac Prods.) with Bob Cummings and Rosemary DeCamp Bob Cummings, director.

NEAL BECKNER, "The Adventures of Ozzie & Harriet"* (Stage 5 Prods.) with the Nelsons. Ozzie Nelson, director

ARCH DALZELL, "Flight"* (McCadden Prods.)

ROBERT RYDER, Commercials* (Frazen Prods.)

FRANK PHILLIPS, "Border Patrol"* (Gallu Prods.) with Richard Webb Jean Yarbrough, director

GOLDWYN STUDIOS

NORBERT BRODINE, ASC "Loretta Young Show"* (Lewislor Prods.) with Loretta Young.

INDEPENDENT

PAUL BEESON, "Summer of the 17th Doll" (Hecht Hill Lancaster for UA, shooting in Australia) with Ernest Borgnine and Anne Baxter Leslie Norman, director.

FELIPE SACDALAN, "The Scavengers" (Hy Ford Prods. for Hal Roach; shooting in Hong Kong, Macao and Manila) with Vince Edwards and Carol Ohmart. John Cromwell, director

RICHARD E. CUNHA, "Bloodlust" (Cinegraf Prods.) with Wilton Graff and June Kenny Ralph Brooke, director.

CARL GUTHRIE, ASC, "The Road Racers" (American Int'l Picts.) with Sally Fraser and Mason Alan Dinehart Arthur Swerdloff, director

FRANK PLANER, ASC, "The Unforgiven" (Panavision & Eastman color; Hecht Hill Lancaster for UA, shooting in Mexico) with Burt Lancaster and Audrey Hepburn John Huston, director

FRED YOUNG, "Solomon and Sheba" (Technicolor, Edw Small Prod for UA, shooting in Spain) with Yul Brynner and Gina Lollobrigida King Vidor, director

LEE GARMES, ASC, "The Big Fisherman" (Eastman color, R. V. Lee Prod for Buena Vista) with Howard Keel and Susan Kohner Frank Borzage, director

JOHN WILES, "The Headless Ghost" (AmaScope & Color; American Int'l Picts., shooting in Britain) with Richard Lyons and Liliane Sattane. Peter G. Scott, director

EDWARD CRONJAGER, ASC, "The Young and the Damned" (Brigadier Prods. Inc.) with Brett Halsey and Lowell Brown. Charles R. Rondeau, director

GAYNE RESCHER, ASC, "Whiplash" (J. Harold Odell Prods., shooting in Puerto Rico, UA release) with Bruce Bennett and Robert Bray Nate Watt, director

RUSSELL METTY, ASC, "Spartacus" (Technirama, Bryna Prods.) with Kirk Douglas and Laurence Olivier Anthony Mann, director.

EDWARD FITZGERALD, ASC, "Johnny Melody" (Hal Roach Prods.) with Alan Freed and Chuck Berry Paul Landres, director.

MEREDITH NICHOLSON, "The Naked Goddess" (Rex Carlton Prods., shooting at Carthay Studios) with Linda Christian and Robert Alda Wm. H. Hole, Jr., director

KEYWEST STUDIOS

WALTER STRENGE, ASC, Series of religious pictures (Family Films) Eddie Dew, director

McGOWAN STUDIOS

BRYDON BAKER, "Death Valley Days"* (McGowan Prods.)

METRO-GOLDWYN-MAYER

ROBERT SURTEES, ASC, "Ben Hur" (shooting in Rome) with Charlton Heston and Jack Hawkins. William Wyler, director

LESTER SHORR, ASC, "Col. Humphrey J. Flack"* (Jody Paa Prods.) with Alan Mowbray and Frank Jenks.

WILLIAM SPENCER, "The Thin Man"* with Peter Lawford and Phyllis Kirk.

Continued on Page 162

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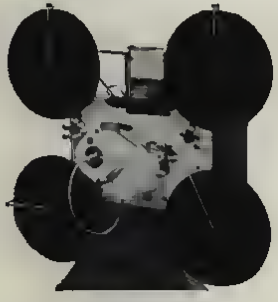

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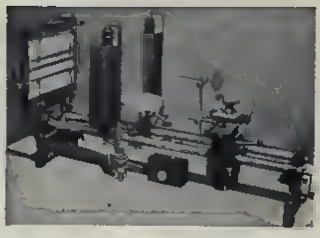

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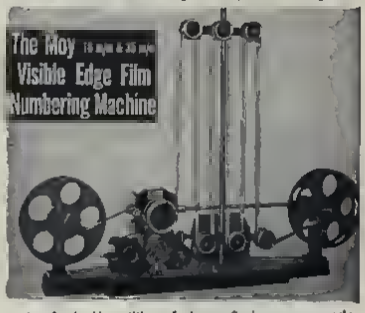

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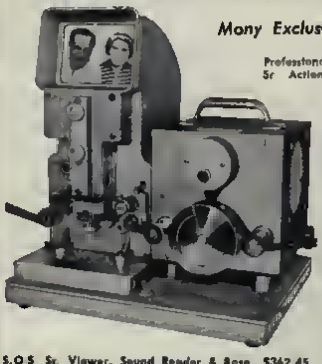

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IN THE WEST...

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New Missile Extends Hustler Bomber Range

Lockheed Weapon, Tested Successfully, Travels 300 Miles When Launched in Air

Los Angeles Times 3★
Part I—FRI., DEC. 26, 1958

BY MARVIN MILES, Times Space-Aviation Editer

Lockheed's air-launched ballistic missile (ALBM) successfully — and secretly — tested at Cape Canaveral, Fla., last Friday is a company-developed weapon that will extend the striking range of a B-58 supersonic bomber 300 miles or more, The Times learned yesterday.

Designated Weapona Systems (WS)-199B, the missile was developed specifically for Convair's Hustler bomber, which has dropped the weapon in two tests to date.

The first was only partially successful in that the guidance failed after successful launch and ignition. Last Friday's test waa reported "highly successful," however.

Given Wrong Name

Erroneoua information in industry publications had labeled the missile as the Bold Orion, but Lockheed knows it aimply as Bold Orion may be the tentative name given a aimilar development hy the Martin Co. of Baltimore.

The Martin missile has been tested six or seven times but so far has not been successful, The Times was told.

Lockheed's ALBM is believed to be 25 to 30 feet long and about three feet in dtameter, with a weight of approximately three and a half tons. It is said to have a speed about 8 to 10 times that of sound and a range—when air launched in the stratosphere—of some 300 miles or more.

It was developed from the Lockheed X-17, a three stage research vehicle designed to test nose cone reentry into the atmosphere.

The X-17 comprised a solid-propellant Sergeant hooster rocket topped by a second atage of three scaled-down Recruit rockete and a aingle Recruit third stage. The second and third stages fired to give the vehicle tremendous speed on its way back to earth.

It is reported the ALBM is a aingle-stage weapon, a modified but improved Sergeant originally developed by the Caltech Jet Propulsion Laboratory here and now fabricated by Thiokol.

Has Vast Advantage

Although it does not have added stages, it haa the vast advantage of being launched at aupersonic speed—better than 1000 m.p.h — and at great heighte, both of which add materially to its range.

When launched by a B-58, the missile is dropped in a horizontal position and its rocket motor is ignited automatically when the missile has cleared the aircraft sufficiently.

It is then propelled forward in fast acceleration until it programs upward into a ballistic trajectory that can be controlled from the bomber until burnout (fuel exhaustion).

After burnout in the climb it flies like a bullet, coasting to apogee (high point) and over a long falling arc to smash into its target with a nuclear warhead.

The great advantage of the missile is the extended reach it can give to U.S. supersonic bombera, permitting them to make their assault and then turn for home a long distance from heavily defended targets.

Lockheed developed the weapon as a company project sparked hy three experts in the firm's Missile Systems Division — Willis Hawkins, Don Murphy and Tom Anderson.

In the development program that has continued for some time, the division has been working closely with Convair to suit the missile to the Huatler as America's fastest bomber.

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Technical QUESTIONS & ANSWERS

Conducted by Walter Strenge, A.S.C.

QUESTIONS relating to cinematography or other phases of film production are invited from readers and will be answered by letter by Walter Strenge or by other qualified members of the American Society of Cinematographers. Questions and answers considered of general interest will appear in this column.—*Ed.*

Q What method is used to obtain a steady level image when photographing subject matter at sound speed from a small boat on open water?—*J. S., Philadelphia, Pa.*

Answer: The camera should be mounted on what is known as a gimbal tripod. This has a weighted free-swinging pendulum suspended from center of the head on which the camera is mounted. As the craft rolls with the sea, the tripod moves with the craft but the pendulum remains fairly perpendicular. (A tripod of this type was pictured in the Birns & Sawyer advertisement in our October, 1958, issue.—ED.) Where the pendulum swings too freely, some dampening can be effected by extending heavy rubber bands from weighted end of pendulum to each of the tripod legs.

For extremely low camera setups, an inverted gimbal should be used. Here the camera hangs in a cradle suspended from the universal joint at top of the gimbal tripod. The camera's weight (or with added weight, if necessary) keeps the camera level. Also, some manual control is usually necessary to stabilize the pendulum in either type of gimbal use described above.—*Clifford Stine, A.S.C.*

Q We have a problem regarding our background projection screen which is marked with blotches of fungus—result of high humidity in our studio. These spots are quite obvious in shots made with this screen. We have tried to eliminate the spots with a number of different solutions, but without success. Any suggestions?—*V. S. B., Manila, Philippines.*

Answer: We suggest that you wash the screen with water, using a soft bristle brush. Then give it another washing—this time with a fungacide detergent cleaner—one that is soluble in water. Follow this with another washing, using the bristle brush, and rinse thoroughly, using clear water.

During this procedure be sure you do not wet the top member of the screen frame, as any water dripping down from this will tend to mar the screen surface, due to accumulation of dust, etc., on frame. Also, do not allow drops of water to stand on screen surface while drying as this will result in objectionable spotting. Absorb any water droplets with a blotter.

Should this treatment fail to restore screen to usable condition, it is likely that the fungus stains have "set," and the screen must be replaced.—*Robert Hansard, A.S.C. Associate*

Q I am having an old Bausch & Lomb lens coated, which I expect to mount in a turret along with two new Baltar lenses, the latter already coated. Will coating the old lens affect its f/ stop rating? I will be using all three lenses interchangeably on the same production.—*V. V. McC., Chenoa, Ill.*

Answer: Coating old lens will affect its f/ stop rating approximately one-third of a stop. Usually, the company who coats the lens will supply a data sheet that shows f/ stop corrections.—*Karl Freund, A.S.C.*

Q Where can I have rolls of French Pathe 9.5mm cine film reduced and copied on 8mm film?—*J. H., New York.*

Answer: George W. Colburn Laboratory, 164 N. Wacker Drive, Chicago 6, Ill.—*Walter Strenge, A.S.C.* ■

Q What is meant by "color saturation"—a term I saw recently in an article referring to Kodachrome duplicates?—*J. McC., Billings, Montana.*

Answer: Webster's Collegiate Dictionary defines color saturation as that "attribute of chromatic colors which determines the difference from a gray color of the same brilliance; distinctness or vividness of hue."

As an example, if we take a dark paint and add white paint and mix, the resulting mixture (or color) will have less saturation than the original color. As more white is added, there will be less saturation.—*Ted Fogelman, A.S.C. Associate.*

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PHOTOGRAPHIC ASSIGNMENTS

Continued from Page t58

DALE DEVERMAN, "One Step Beyond"*, John Newland, director.

WILLIAM DANIELS, ASC, "Never So Few" (CinemaScope & Color, shooting in Ceylon) with Frank Sinatra and Sammy Davis, Jr. E. Grainger, director.

WALLACE CASTLE ASC, "The Big Operator" (Al Zugsmith Prod—Fryman Ent.) with Mickey Rooney and Steve Cochran Charles Haas, director.

NICK MUSURACA, ASC, Commercials*.

RAY FOSTER, ASC, Commercials*.

JOHN NICHOLAUS, "Rawhide"* (CBS-TV) with Eric Fleming and Clint Eastwood.

HARKNESS SMITH, "Best of the Post"* (Robert Enders Prods.).

WILLIAM MARGULIES, "The Lawless Years"* (Jack Chertok Prods.) with James Gregory and Robert Karnes. Allen Miner, director.

MOTION PICTURE CENTER

ROBERT DE GRASSE, ASC, "Danny Thomas Show"* (Desilu Prods.) with Danny Thomas. Sheldon Leonard, director, "Love and Marriage"* (Desilu Prods.) Bob Sweeney, director.

SID HICKOX, ASC, "December Bride"* (Desilu Prods.) with Spring Byington and Frances Rafferty Frederick DaCordova, director.

NICK MUSURACA, ASC, "Westingbouse Desilu Playhouse"* (Desilu Prods.) Jerry Thorpe, director.

ROBERT HAUSER, "Derringer"* (Desilu Prods.) with Jack Mahoney, "Man with a Camera"* (Desilu Prods.) with Charles Bronson Richard Sale, director.

PARAMOUNT

HASKELL BOGGS, "Don't Give up the Ship" (Hal B. Wallis) with Jerry Lewis and Dina Merrill Norman Taurog director.

CHARLES LANG, JR., ASC, "One-Eyed Jacks" (VistaVision & Color, Pennebaker Prods.) with Marlon Brando and Karl Malden Marlon Brando, director.

LOYAL GRIGGS, ASC, "The Jayhawkers" (VistaVision & Technicolor) with Jeff Chandler and Fess Parker Melvin Frank, director.

ROBERT BURKS, ASC, "But Not For Me" (VistaVision) with Clark Gable and Carroll Baker Walter Lang, director.

HAROLD LIPSTEIN, ASC, "Heller with a Gun" with Sophia Loren and Steve Forrest George Cukor, director.

PARAMOUNT SUNSET

JACK MARTA, "Rescue 8"* (Cinefilm, Inc.) with Jim Davis and Lang Jeffries William Whitney, director.

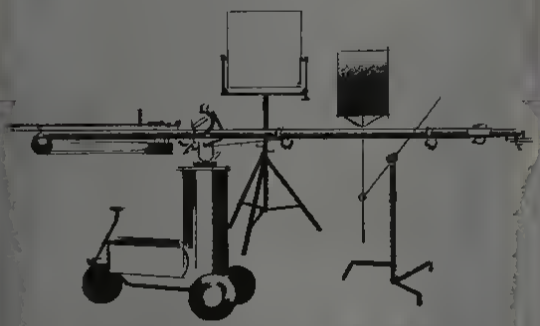
REPUBLIC STUDIOS

MACK STENGLER, ASC, "Leave it to Beaver"* (Gomalco Prods.) with Barbara Billingsley and Hugh Beaumont. Norman Tokar, director.

RAY RENNAHAN, ASC, "Buckskin"* (Revue Prods.)

Continued on Page 164

LIGHTS



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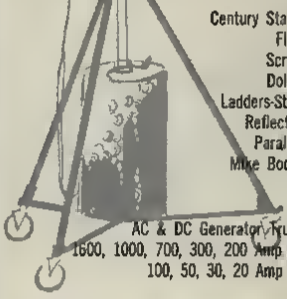

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PHOTOGRAPHIC ASSIGNMENTS

Continued from Page 162

REPUBLIC STUDIOS

BENJAMIN KLINE, ASC, "Wagon Train"* (Revue Prods.) with Ward Bond.

ELLIS THACKERY, ASC, "Restless Gun"* (Window-Glen Prods.) with John Payne. Justus Addiss, director, "Wells Fargo"* (Overland Prods.) with Dale Robertson Earl Bellamy, director.

LIONEL LINDON, ASC, "Alfred Hitchcock Presents"* (Revue Prods.).

WILLIAM SICKNER, ASC, JOHN RUSSELL, ASC, "Schlitz-Lux Playhouse"* (Revue Prods.).

JOHN WARREN, ASC, JOHN RUSSELL, ASC, "Mickey Spillane's Mike Hammer"* (Revue Prods.).

ELLIS THACKERY, ASC, "State Troopers"* (Revue Prods.) with Rod Cameron.

JACK MARTA, WILLIAM SICKNER, ASC, "Bachelor Father"* (Bachelor Prods.) with John Forsythe.

JOHN RUSSELL, ASC, WILLIAM SICKNER, ASC, LIONEL LINDON, ASC, "General Electric Theatre"* (Revue Prods.)

JOHN RUSSELL, ASC, BURT GLENNON, "M Squad"* (Latimer Preds.) with Lee Marvin

JOHN WARREN, ASC, "S A. 7"* (Revue Prods.) Richard Bartlett, director.

RKO GOWER

ROBERT PITTACK, ASC, "Ann Sothern Show"* (Desilu Prods.) with Ann Sothern.

GEORGE CLEMENS, ASC, "The Millionaire"* (Don Fedderson Prods.).

HENRY CRONJAGER, "Whirlybirds"* (Desilu Prods.) with Kenneth Tobey and Craig Hill Robert Alton, director

RKO PATHE

LOTHROP WORTH, ASC, "The Real McCoy's"* (Brennan-Westgate Prods.) with Walter Brennan Hy Averback, director

PAUL IVANO, "The Texan"* (Desilu Prods.)

HAL ROACH STUDIOS

EDWARD FITZGERALD, ASC, "The Gale Storm Show"* with Gale Storm and Zasu Pitts. William Seiter, director.

HOWARD SCHWARTZ "The Veil"* with Boris Karloff, "Sword and the Arrow"* with Guy Madison.

TREFCO STUDIOS, Nashville, Tenn.

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MILTON KRASNER, ASC, "The Man who Understood Women" (C'Scope; DeLuxe color) with Leslie Caron and Henry Fonda Nunnally Johnson, director.

LEO TOVER, ASC, "Say One for Me" (C'Scope & Color) with Bing Crosby and Debbie Reynolds. Frank Tashlin, director

CHARLES CLARKE, ASC, "Holiday for Lovers" (C'Scope & Color) with Jane Wyman and Clifton Webb Henry Levin, director

WILLIAM MELLOR, ASC, "Woman Obsessed" (C'Scope, DeLuxe color) with Susan Hayward and Stephen Boyd. Henry Hathaway, director.

REVUE STUDIOS

MARK DAVIS, ASC, Commercial*

CLIFFORD STINE, ASC, Commercial*

JAMES DROUGHT, Commercials*

PHILIP LATHROP, "Peter Gunn"* (Sparta Prods.) with Craig Stevens; "Steve Canyon"*, (Pegasus Prods.) with Dean Fredericks.

ARTHUR FEINGEL, ASC, Commercials*

ARTHUR ARLING, ASC, Commercials*

MAURY GERTSMANN, ASC, Commercials*.

HAL MOHR, ASC, Commercials*

WALTER STRENGE, ASC, Commercials*.

CARL GUTHRIE, ASC, Commercials*.

ELLIS CARTER, ASC, "The Leech" with Colleen Gray and Grant Williams. Edward Dein, director.

WARNER BROS

MARK DAVIS, ASC Commercials*

EDWIN DUPAR, ASC, "Sugarfoot"* with Will Hutchins.

J PEVERELL MARLEY, ASC, "Cheyenne"* with Ty Hardin.

RALPH WOOLSEY, ASC, EDWIN DUPAR, ASC, WESLEY ANDERSON, PERRY FINNERMAN, "Lawman"* with John Russell

HAROLD STINE, ASC, "77 Sunset Strip"* with Efrem Zimbalist, Jr Monty Pittman, director.

WESLEY ANDERSON, RALPH WOOLSEY, ASC, EDWIN DUPAR, ASC, "Maverick"* with Jack Kelley

PERRY FINNERMAN, WESLEY ANDERSON, "Colt 45"* with Wayde Preston

ARTHUR FEINDEL, ASC, Commercials*.

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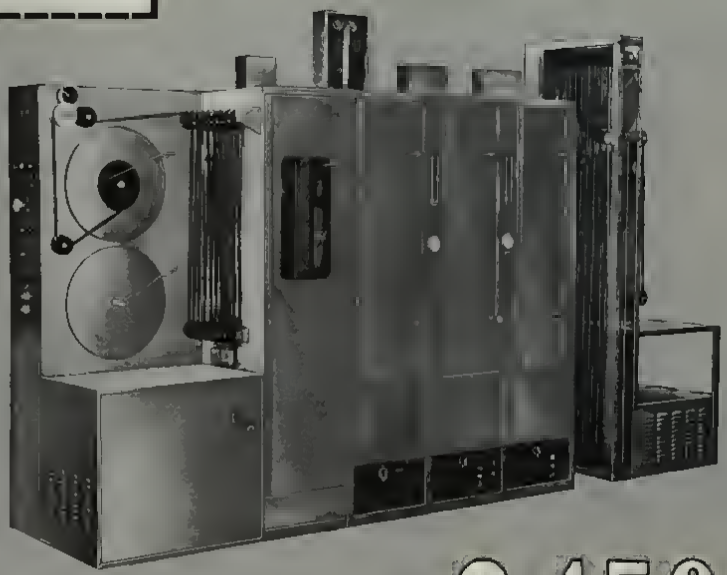

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NOT AN INTERIOR IN THE PICTURE!

"They Come to Corduro" filmed entirely out of doors on location in Utah by Burnett Guffey, using the new Panatar camera lenses

By ARTHUR E GAVIN

THE DESIRE FOR the utmost in realism as the keynote of "They Came To Cordura," his five million-dollar CinemaScope-color production for Columbia, led Producer William Goetz to the decision to photograph the entire picture on location at St. George, Utah. The state's wildly beautiful and rugged mountain ranges served as a background for the action captured by the new Panatar camera lenses that were used for the first time in an outdoor film under the guidance of Director of Photography Burnett Guffey, A.S.C.

"They Came to Cordura" is truly as big as all outdoors, with not a single interior sequence included in the film.

For the picturization of the Glendon Swarthout best-selling novel Producer Goetz selected one of the outstanding all-star casts of recent years. Gary Cooper, Rita Hayworth, Van Heflin, Tab Hunter and Richard Conte head the cast with Michael Callan, Dick York and Robert Keith also in important roles. Robert Rossen directed.

The story deals with the last cavalry charge of the U. S. Army under General Pershing during the 1916 Mexican campaign involving the forces of Pancho Villa, after which the army became mechanized.

Primarily, "They Came to Cordura" is a story about courage, an examination of its anatomy, a search for the

mysterious factor that impels some men to live for a time beyond the edges of normal human conduct. The drama unfolds through the eyes of Gary Cooper, who, when his test comes in his first battle, hides in fear. He tries to find out what gives a man courage by observing and quizzing five men who have shown heroism in battle. What turns Cooper into a brave man before the film ends makes for a vivid, bruising story, which includes a wonderful love story, too, between Cooper and Heyworth

Commenting on the photography, Guffey said: "It is the first picture I have ever photographed where not a single scene was shot in an interior set." In planning the camera work with Guffey, producer William Goetz emphasized that stark realism was to be the keynote in keeping with the harsh, brutal aspect of the story. It was felt that staging much of the action in day-for-night shots, in keeping with the pattern of the original story, was all-important toward the achievement of realism. And to further enhance this aim, it was also decided to photograph the entire production in actual continuity. In this way, the unshaven men's beards would grow progressively denser and their general appearance would become more grimy and tattered as would be expected of men engaged in war in a rugged and desolate country.

In Utah, some distance from the town of St. George, Columbia Pictures found an ideal location site which approximated the terrain over which Mexican and U.S. Cavalry fought in 1916. To simplify the matter of transportation for both cast and crew and the equipment necessary for location shooting, the company chartered a 10-car train from Union Pacific. Composed of flat cars and freight cars to carry the equipment, and Pullman coaches to accommodate personnel traveling to the location site, Pullman compartments and drawing rooms served as dressing rooms for the actors and stars.

The train served still another purpose, that of providing the necessary power required for booster lights for day as well as day-for-night shots. A mobile generator mounted on a flat car was coupled ahead of the locomotive. As the train was always backed, or operated in reverse, to the location site, this meant the generator was kept a distance of around 300 yards from the actual scene of shooting so the throb of its motors would not intrude on sound recording. "Cables from the generator were strung the entire length of the train, hooked to each car," Guffey explains, "so when we completed shooting at a site, all we had to do was 'wrap up' whatever we were using and load it on the first car, which was a flat car and the one nearest the scene of operations. We never had to break the cables at all, so they were always ready for the next location."

ELEVEN-CAR COMBINATION freight and passenger train was company's headquarters and supply base while shooting on location. To keep power generator as far as possible from shooting site to avoid unwanted sound pickup, it was mounted on flatcar and coupled ahead of the locomotive (arrow) at far end.

The photography of "They Came To Cordura" is notable for its more than average number of day-for-night shots — about a third of the picture — in which scenes are given an acceptable illusion of night by a procedure that now has become more or less standard where Eastman Color negative is used. "I used graduated ND filters to bring

Continued on Page 191

GIANT CHAPMAN camera crane, shipped to location, was used in making majority of shots. Grouped around camera on boom extension are Director of Photography Guffey, his assistant and operator, as they prepare to shoot start of cavalry charge for "They Came to Cordura."

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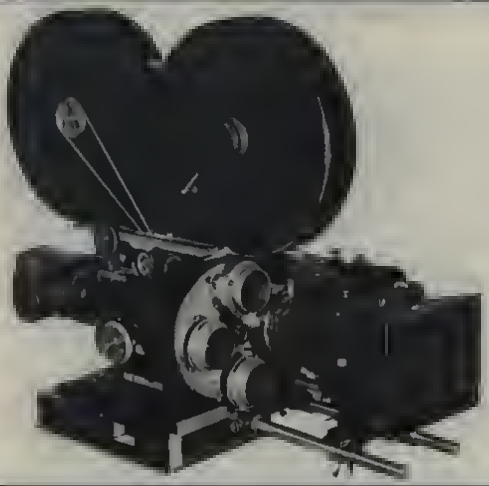

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50mm Astro Berlin	240	140
75mm Astro Berlin	285	165
100mm Astro Pan Tacher	395	195
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35mm Eyemo Q Turret (M G M), no lenses		295
35mm DeVry with lens (M-G-M)		40

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TV News—Growing Market For Free Lance Cinematographers

By FRED WOODRESS

ASPIRING YOUNG MOTION picture cameramen who once thought the professional field a goal hard to attain are finding hitherto unlooked-for opportunities in television. For reasons of economics, neither TV stations nor TV networks are able to maintain staffs of salaried field cameramen. Yet the medium requires a steady flow of newsworthy footage daily. This has led to the development of correspondent cameramen or "stringers," as they are known in the industry.

A marked attribute of the typical stringer is his youth. Some got their start while still in high school. Typical of this new type semi-professional is Sam Salerno, an eighteen-year-old high school student of Birmingham, Alabama. Despite his age, Salerno already has had three years' experience as a "news stringer" for Birmingham's two TV stations and as a free lancer for some of his hometown public relations and advertising agencies.

Salerno owns a 16mm Auricon sound camera and a Bolex H-16, both bought with earnings from his free lance work. His ambition is to go to the University of California in Los Angeles next Fall to study cinematography.

This commercial film making experience, which Salerno began at the age of 15, wouldn't have been possible a few years ago before TV stations began buying film clips for news shows. But today, these opportunities exist in almost all parts of the country.

Veteran cinematographers might argue that TV stringers aren't pros, but by definition anyone who gets paid for their skills or services is a pro just the same as in the sports field. Probably a better name for them would be semi-pros. But already some stringers have graduated to the ranks of full-time TV news-film cameramen or news editors.

Take Jim Atkins, for instance. Today, Atkins is News Director of the Taft-owned CBS station, WBRC-TV. He is responsible for directing the activities of 50 correspondent cameramen like Salerno, and editing the news and news films necessary to the production of his station's various news shows. Only a couple of years ago Atkins was a darkroom assistant at the Scripps-Howard Birmingham Post-Herald, running the wirephoto machine and doing odd jobs. He worked his way up to photographer, then photo-reporter and finally TV editor.

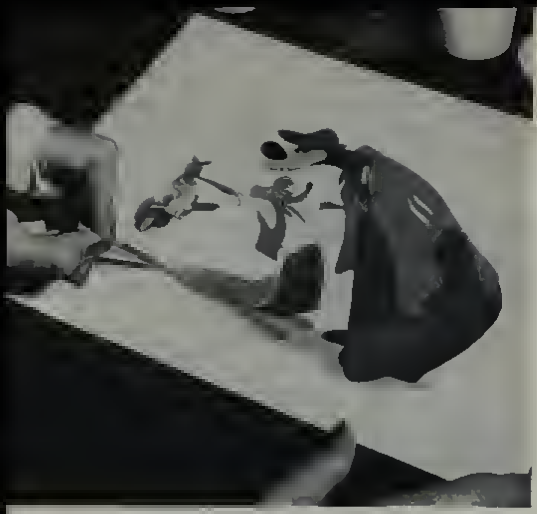
While working as TV editor he became interested in motion picture photography. He bought an inexpensive camera and started free lancing. His newspaper training and an innate sense of timing gave him an edge over other more experienced competitors, and he soon was averaging $100 a month free lance income. Soon, he was selling footage to both the CBS and NBC networks.

The sale of an unusual film of a racial incident to NBC got him out of the newspaper business and into TV. One day he and his TV Editor counterpart on the Birmingham News, Roger Thames, were being wooed for publicity by the WAPI-TV station program director, when an NBC newscast carried a Birmingham film. The program director was surprised to see the film, noting that his own news staff cinematographers had failed to cover the incident. He wondered out loud how NBC got the footage and Atkins owned up to the accomplishment. Atkins was offered a job as cameraman-reporter for WAPI-TV, which he accepted.

Later, when News Director Leo Willette left WBRC-TV to join Chrysler as a film editor in Detroit, Atkins was promoted to news director, another

Continued on Page 186

JIM ATKINS, while a newspaper reporter, discovered new interests in photography, later bought a 16mm camera which led to shooting spot news for local TV stations. Today he's News Editor for WBRC-TV, Birmingham, Ala., still covers local news events using equipment shown here



AFTER THE CELS have been inked, the seperately outlined areas of the characters, etc, are painted according to a precisely worked-out color plan that insures uniformity of colors throughout the production

ANIMATED FILM TECHNIQUES

Part VIII: Inking and painting— final stages of cartaan animatian

IN THE PRODUCTION of an animated cartoon for theatre release, where a coordinated, systematic method of production prevails, the cartoon goes into the home stretch as soon as the cleaned up animation drawings receive the Director's "O K for Inkers"

All the drawings are now delivered to the Inking Department, where they are first subjected to a final checkup to make sure that the mechanics of the scene are correct, i e., all drawings are in their proper order, numbered correctly, and camera and pan moves accurately detailed, etc

"Inking" literally implies tracing the animation drawings onto celluloid with India ink However, inking is more than simply tracing. It is really a re-drawing of the character. The inker must transpose the animation drawing onto celluloid, retaining as much of the freedom, construction and spontaneity of the original as possible This calls for much more skill than just the ability to trace It's no cinch to swing a smooth, even pen line across a slick "cell" and accurately follow the outlines of the pencil drawing. A deviation of only the thickness of a pen line may be enough to destroy the feeling or construction of the drawing An examination of the inked cell being painted in the accompanying illustration will indicate to what extent a good inker is able to retain the feeling and expression of the original animation drawing

All inking is done on the front side of the cells. The paint is applied on the back. Inkers work on boards fitted with registering pegs that fit the punch holes in the cells and animation drawings For the average cartoon, black ink is used to outline the drawing, but in a picture such as "Bambi," where more realism and roundness in the characters was desirable, a grey outline was used Black outlines and the flat tones of the cell paint impart a one-dimensional, "cartoony" feeling to the characters which tends to be inconsistent with the halftones of the background This aspect isn't too obvious ordinarily, but in "Bambi" the desire for realism and a convincing characterization took precedent over accepted cartoon technique

The inker must keep a careful eye on the technical instructions given him regarding trace-backs, held cells, and registering of characters to the background. A "Color Model" is provided, which graphically defines the color or tints of inks and paints to be used. When completely inked, the cells are sent to the Painting Dept. for coloring

The paints are applied in flat tones within the areas indicated by the inked outlines. This process, while not quite as exacting as inking, requires a sureness and steadiness of hand and the utmost patience Each painter usually handles

Continued on Page 197

PHOTOGRAPHING THE CELS At the moment of exposure, a glass platen is lowered on the cel set up and held lightly against it by air-pressure to prevent wrinkling or buckling of the cels.

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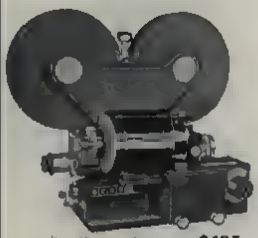

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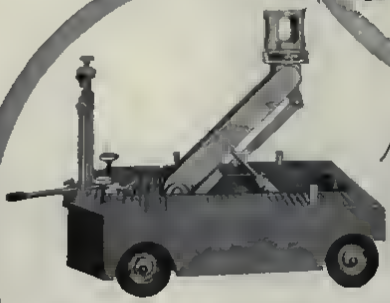

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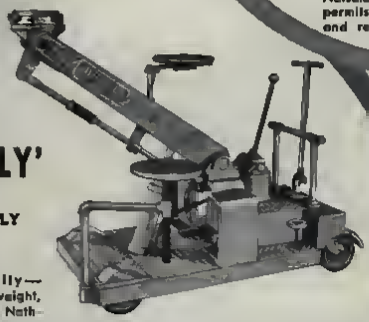

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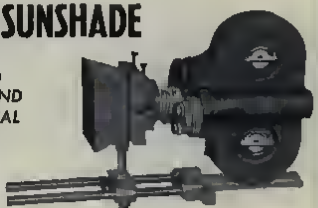

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FIG 1—The Mitchell BNC with selsyn operated Rebel Focus Control, which enables the camera to be focused from a remote position by an assistant when follow focus shots are being made with the camera mounted on a crane or dolly.

THE MITCHELL

Hollywood's favori

By CHARLES LORING

FOR MORE THAN 20 years the Mitchell motion picture camera has been regarded by the professional film industry in Hollywood and abroad as the faithful "workhorse" of production. It has earned this reputation because of its outstanding adaptability and dependability in all fields of motion picture production. Yet, no such homespun appellation can conceal the fact that the Mitchell is truly the aristocrat of motion picture cameras. While there are several other excellent cameras available, the fact remains that an overwhelmingly high percentage of studio production filming today is done with Mitchell equipment.

Except for students in some college cinema classes, few aspiring cinematographers have opportunity to examine these cameras first hand much less see them in action. But nearly every motion picture cameraman with high professional aspirations hopes someday to find himself behind a Mitchell, shooting a major film production. The ensuing detailed descriptions plus the accompanying illustrations are therefore presented here for the edification of these cameramen. In another article to follow, we will explain the operational procedures for these cameras.

The Mitchells (there are several models, as will be described later) are highly complex precision instruments engineered to meet the most exacting requirements of the cinematographer engaged in major studio film production photography or those filming in related professional fields. The 35mm Mitchells are manufactured in two standard models: the BNC and the NC. The BNC or Studio Model is self-blimped; that is, it is completely enclosed in a sound-insulated outer case. The various controls necessary for the operation of the camera are of the quick-disconnect type, to prevent camera operating sounds from being transmitted from the camera to the outside. The BNC was developed especially for sound stage use where a noiseless, blimpless camera is essential.

The NC model is similar to the BNC Studio Model with the exception that no sound insulation is provided. Even so, it is relatively silent in operation so that a directional microphone can be used as close as 10 feet from the

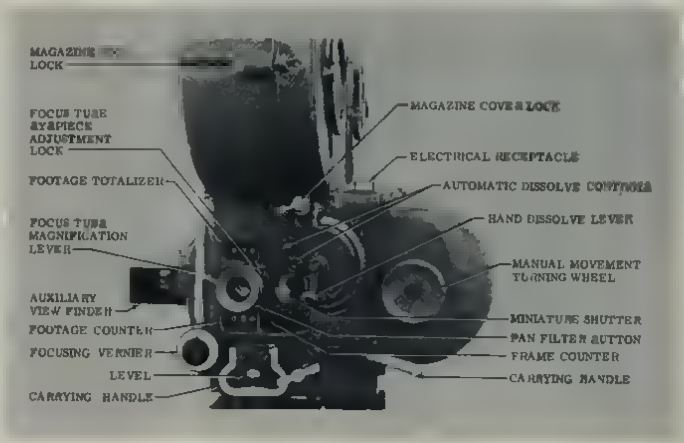

FIG 2—Rear view of the Mitchell BNC camera.

tudia camera

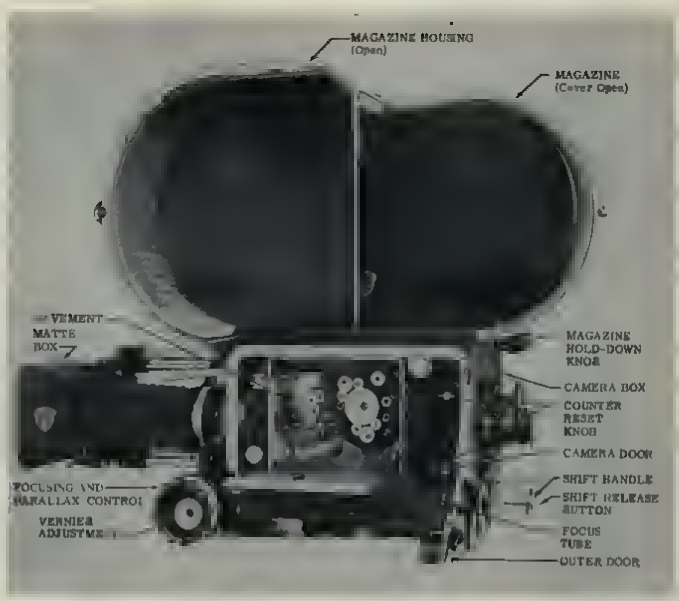

FIG 3—Left side of BNC camera showing door open and various controls.

camera without picking up appreciable camera noise. The main advantage of the NC model is that it is considerably lighter in weight than the BNC model.

There are other minor technical differences between the two models, but fundamentally they are very similar in construction. Each camera is composed of two main sections, the base frame and the camera box, each of which is cast in one piece of aluminum alloy. Mounted on the base frame are the four-way mattes and the rising and falling fronts. The camera box contains the complete film-moving and driving mechanisms and is mounted on dovetail tracks which are an integral part of the base.

The outer case of the BNC (which acts as a blimp) consists of three main sections: the magazine housing, the motor housing and the main housing. Each section is lined with sound-insulating material. The outer access door is hinged to the left side of the main housing. Mounted on the main housing case are the parallax and focusing control, the matte box bracket, the carrying handles, the power input plug, the view finder dovetail bracket, the spirit level tube and the buckle trip reset plunger.

Controls located outside of the BNC case consist of the focus tube magnification lever, filter operating plungers, eyepiece, hand dissolve lever, automatic dissolve push-buttons, shift rack handle and manual threading wheel. These outer case controls are spring loaded for instantaneous disconnect when released. This feature is provided to avoid contact with the inner controls during the operation of the camera so that no noise is transmitted from the camera box to the outside through these controls. The outer case has small windows for viewing the miniature monitor shutter, the calibrated dissolve indicator, the footage totalizer, the footage counter and the frame counter.

The camera box itself is divided logitudinally into two separate compartments. The left-hand or operating side contains the film moving mechan-

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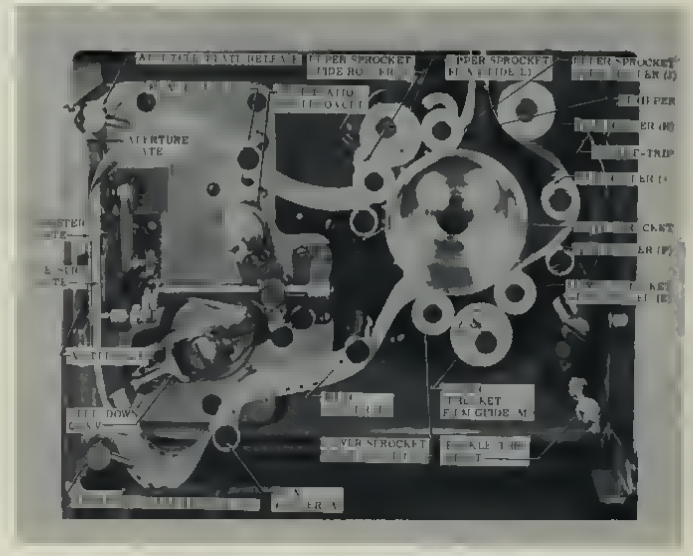
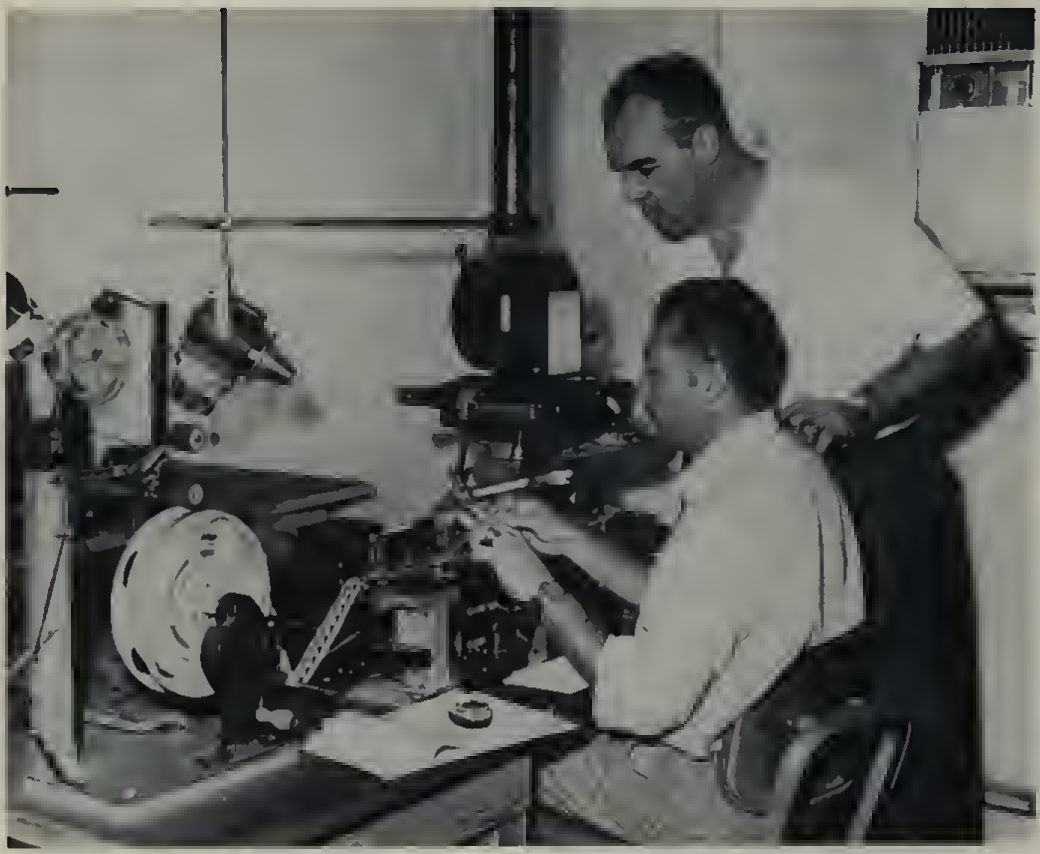


FIG 4—Pattern of film flow through the Mitchell BNC



CONVERTING A 50 YEAR OLD paper print to safety base motion picture film Kemp R. Niver, standing, watches technician precisely align pictures on the paper tape with frame line of the copying camera field Machine is eleventh in series designed by Niver for paper print and old nitrate film restoration Most of the films had never before been projected as movies!

Operation "Restoration"

Kemp Niver's thirst for knowledge of early-day movie making led him to develop the industry's first practical method of producing projectable prints of old nitrate films

By ARTHUR ROWAN

THANKS TO THE INGENUITY and perseverance of a man who abandoned law to get into the motion picture business, many of the movies made by the industry's pioneers, as well as a great many of its silent era masterpiece considered impossible to project, have been restored and made projectable. Some of the very first motion pictures ever made, many of them actually never projected, can now be seen on the motion picture screen.

Although numerous efforts have been made over the years to produce projectable motion picture prints of an-

cient and valuable films, it remained for Kemp R Niver, head of Renovare Film Company of Hollywood, to achieve the first practical commercial result Niver has parlayed what was in the beginning a casual interest in old film restoration to a promising business venture which, while not making a great deal of money now, promises a rosy future for Niver once the industry learns what he has to offer. But Niver didn't go into this business to get rich Actually the monetary rewards were never much of a consideration. The project from the very beginning has been sort of a labor of love, result of a passion Niver had developed for researching history of early-day movie makers and their techniques. In his library are some of the rarest of books on the subject—as rare as some of the old paper prints and nitrate films which he has restored and made projectable on modern screening equipment.

Right now a lot of television entrepreneurs would like to acquire prints of motion pictures made in the early days of the silent film era as video program material—movies such as the old Mack Sennett comedies, original Lon Chaney thrillers, and others Search for prints of these films revealed the fact that none in projectable state exist.

Then there are organizations such as the Academy of Motion Picture Arts and Sciences, one of whose projects is the establishing and conduct of an archive of historical movie memorabilia, and the Library of Congress with vaults of paper prints of films made in the early days of the industry as a means of establishing copyright, which are desirous of converting these records to projectable motion pictures. Now for the first time, old inflammable nitrate film prints and the Library of Congress' yellowed and decayed paper prints can be, and are being, restored on acetate safety film.

Reason the restoration work is not progressing on a scale commensurate with its worth is that those in possession of the old records have not the funds to carry it on Both organizations previously mentioned have in the past secured funds on which to start their film restoration projects, but at the present time they await further grants that will enable them to proceed with this valuable work

It is paradoxical that the very industry the restoration project will benefit and, indeed, the one that should be

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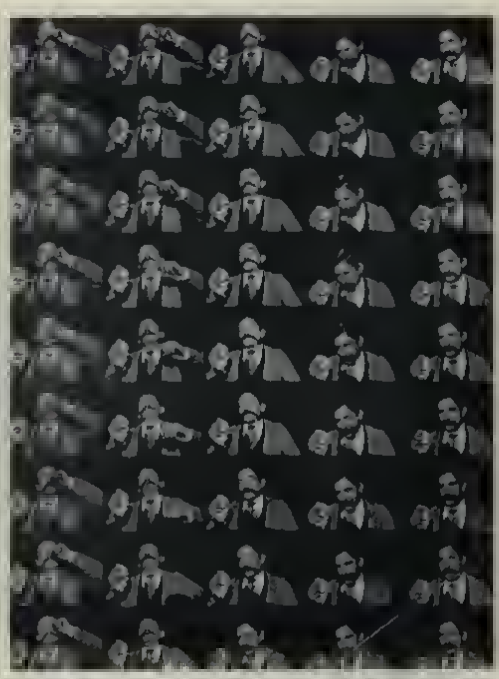
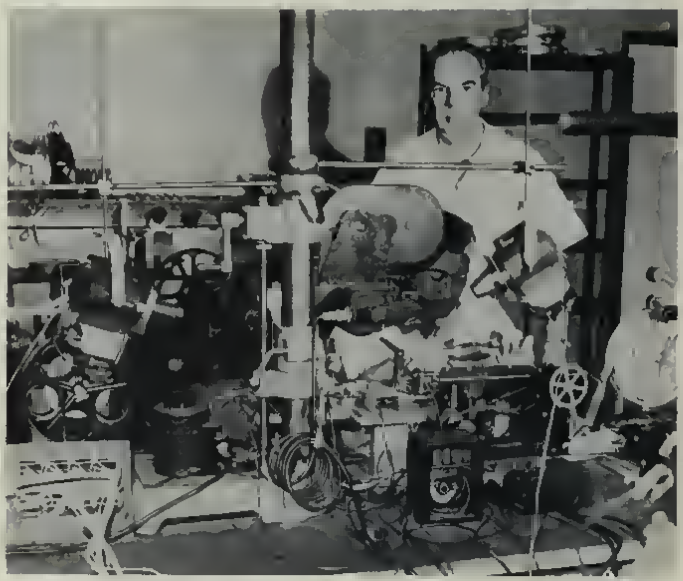


FIRST MOTION picture made with a revolving shutter camera by Thomas A. Edison—date 1889 He cut negative into five strips, as shown, then had contact print made of the layout which was sent, together with required fee of 50c, to U S. Patent Office for copyright Title of picture was "The Sneeze" Kemp Niver reproduced the images on 35mm motion picture film, which was projected as a novelty at 1958 Academy Awards presentations program in Hollywood



ANOTHER VIEW of the nitrate film and paper print copying machine designed and built by Kemp R Niver (standing) Precision alignment of each picture in the rephotographing process is key to success of the Renovare film restoration procedure.

FILMING TH

THE TWO BASIC cameras that were set up to photograph Bob Hope's performance on flight deck of the USS Forrestal, anchored off Naples, Italy. Both cameras are Mitchell NCs. One on left mounts a Zoom lens and was the workhorse of the set-up. Director of Photography, Alan Stensvold, ASC, (arrow) used telephone intercom (not shown here) to direct camera operations of his remotely-positioned camera crews. Up to four cameras were used on every take.

ON THE MORNING of December 17 last, two military transport planes took off from Burbank airport on an important mission. The passenger list included Bob Hope movie columnist Hedda Hopper, entertainers Jerry Colonna, Elaine Dunn, Molly Bee, and Randy Sparks, Les Brown's orchestra, plus a staff of production, sound and camera technicians. In all, the entourage comprised 80 persons.

Twelve days, ten shows, 14,000 nautical miles and 73,000 feet of exposed 35mm movie film later, the same planes touched down at Burbank again. Result of the mission? The Christmas of thousands of American service men in far-flung bases across the globe had been made happier because Bob Hope and his fellow entertainers had brought a Yuletide program of typically American comedy and music right to their foreign doorsteps.

When the filmed version of this junket was telecast on the NBC network sometime later, American audiences also were entertained by the overseas performances of the star and his company. Technicians viewing the show were even more impressed with the technical quality of the filmed presentation, particularly the excellent camerawork of Alan Stensvold, A.S.C., and his crew.

For Stensvold the assignment proved an enjoyable and productive reunion with Bob Hope, whose Alaskan tour he had also photographed in 1956. It was also a tremendous challenge to Stenvold's technical experience and know-how. The smooth results flashed across the TV tubes of the nation gave no hint of the many difficult photographic problems he and his staff had encountered and solved in the course of the junket.

Because the trip was basically of catch-as-catch-can nature as far as filming was concerned, it was important that as many details as possible be locked down in advance. This was accomplished through many conferences and extensive pre-planning by Bob Hope, Stensvold and director Mort Lachman prior to the junket. Every problem and situation that could be foreseen was analyzed and provided for, with Hope slanting the presentation wherever possible to satisfy the technical requirements of cinematography. Approximately one-half of each of the ten shows was scheduled for filming. It was understood that at each of the scheduled stops, local entertainers would be integrated into Hope's program and that situations with a local flavor would be concocted by his writers during last-minute "crash" sessions right on the spot. These were the segments that would have to be filmed "off-the-cuff" and without rehearsal by the camera crew.

Director of Photography Stensvold brought along a crew from Hollywood consisting of two Operators, two Assistant Cameramen, and a Gaffer. In Moron, Spain, this crew was augmented by cameramen from the U.S. Air Force base at Berlin, who shot fill-in and reaction shots with 35mm hand cameras.

Camera equipment taken along on the jaunt included four NC Mitchells, three Arriflexes, and two 100-ft Eyemos—all supplied by the Air Force photographic unit at Lookout Moun-

By HERB A. LIGHTMAN

BOB HOPE CHRISTMAS TOUR . . .

How resourcefulness plus intelligent use of o ronge of negotive stocks achieved o notoble photogrophic result under highly odverse conditions

tain, in Los Angeles. On the turret of one NC Mitchell were four Baltar lenses of various focal lengths, which afforded utmost flexibility in record ing any type shot called for, including establishing and medium shots. Two French zoom lenses were included and used for recording closeups of the performers.

Selection of film stock was governed somewhat by the fact that the zoom lenses were limited in speed Du Pont Superior 2 was used in the NC with the turrets, which was operated at an average lens opening of f/5. However, since the efficient working stop of the zoom lenses was about f/6.3, ultra fast Du Pont Superior was used on all zoom shots This is the film that Stensvold uses extensively in filming Art

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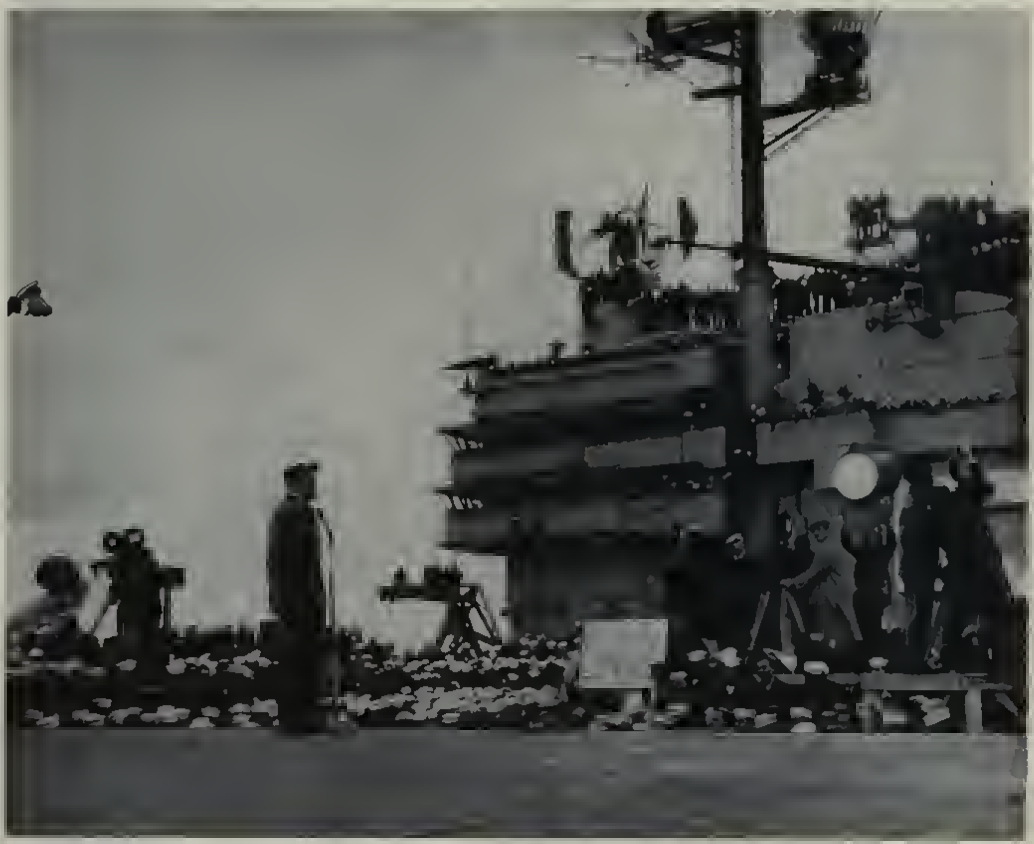

BOB HOPE, standing before microphone, makes ready to start his show on flight deck of aircraft carrier USS Forrestal in Naples Location of the four cameras used in covering this show are clearly visible Lettered panel above heads of audience cues Hope on lines for his prepared monologue. As show got underway, a sudden rainstorm forced everyone below deck where proceedings continued

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FILMING A PRIZE WINNER

How a non-professional's professional approach in planning and executing the photography of a contest film netted a Gold Medal award

By CLIFFORD V. HARRINGTON

AMONG THE HIGHLIGHTS of "The Nightingale," a 16mm color film awarded a Gold Medal in a recent competition conducted by the Photographic Society of America, are optical effects which many non-professionals consider beyond their capabilities. Tullio Pellegrini, of San Francisco, who made the film has achieved with inexpensive equipment made in his home workshop expert effects rivaling those produced by professional studios and optical effects laboratories. In addition, careful pre-production planning plus skills which he has acquired through many years of 16mm photography combined to impart to the film all the aspects of a veteran cinematographer's skilled handling of lenses, lighting and composition.

The color and sound film required one month of photography and sound recording in Italy, and additional weeks of work by Pellegrini in his home studio-workshop to complete. The idea for the one-reel picture came to him when he revisited his boyhood home in the thousand-year-old village of Alto Pascio, Italy. The memories of his youth were filled with scenes of exotic birds native to his homeland and he determined to recapture these scenes on color film and bring them back with him to the United States.

Pellegrini knew that shots of the nightingales, while interesting, would be more entertaining if they were woven into a story. So he decided to tell a simple story of a boy and girl who meet in the forest and discover the nest of a nightingale. Returning periodically to watch the eggs hatch and the birds grow, they eventually discover that they have fallen in love.

Pellegrini selected two young people from the village of Alto Pascio to be his actors. He coached and rehearsed them carefully and managed to draw creditable performances from them in a minimum of time. The scenes of the pair required parts of five days to complete.

Meanwhile, he searched the forest to locate several nightingale nests. Because the birds build their homes near the ground, they often are damaged or destroyed. Pellegrini wanted alternate locations in the event he could not photograph at the first spot he selected. In all, he used five nests before the filming was ended.

Pellegrini discovered that he could photograph most of his bird shots only between 10 and 11 a.m. when the sun was at an angle to illuminate the hidden nests. At each location he tied green strings to any branches or twigs that might be in the way of the lens. When he was prepared to shoot he would set up his Bolex and walk away to dispel the fears of the mother bird. As she became quiet,

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A BOLEX H-16 camera with a complement of lenses including a zoom was used by Tullio Pellegrini to photograph scenes in his native Italy for his prize winning color film "The Nightingale." Later he employed professional techniques to produce complex scenes for the film—some by animation.

A MICROPHONE boom is a "must" for efficient recording of sound in the small studio or on location. It should be light in weight and as compact as possible in design and construction to permit free and easy use in tight quarters.

Do-It-Yourself Sound Recording

Part V: The auxiliary equipment necessary for recording sound in the studio and in the field

By ALLEN JACOBS

The Calvin Co., Inc., Kansas City, Mo.

PREVIOUS ARTICLES in this series have discussed the various phases of magnetic sound recording and some of the basic equipment that is required for this work. This month the various items of auxiliary equipment will be described—equipment that is secondary, but nonetheless important in the function of recording sound for a motion picture, either in the studio or on location.

A source of adequate power to run the camera and recorder is, of course, necessary when sound is to be recorded on location. Where conventional domestic power sources are unavailable, then the producer must bring along batteries or other equipment to supply the required power. The producer who has his own fully-equipped sound truck, of course, usually has this problem already taken care of.

Until recently, 6-volt power sources have been the most frequently used for motion picture work by the small film producer. Among these were small motor generators, operated by a motor driving off a 6-volt storage battery, and producing 110 volts of AC current. Today, similar units are powered by 12 or 24 volt storage batteries. One of the advantages of 12-volt equipment is that if you are caught on location with the sound equipment batteries low, you can drive the generator motor off the battery of any automobile or truck—many of which now have 12-volt batteries. The battery for the portable generator can then be recharged on location, or as you drive, from your automobile generator. (A small power generator has also been developed which may be installed in one's car and driven by the fan belt without disturbing the car's other equipment.—ED).

In choosing a portable generator, a safe margin of power should be an important consideration. If your equipment normally pulls 200 watts, you should have at least a 50% margin of safety, or a source of 300 watts. Beyond that, even though a 300-watt generator obviously will carry a 200-watt load, it would be still wiser to choose a unit that delivered 500 watts and assure a good safety margin in any emergency.

A portable power source should have a visual means of setting it to deliver 60 cycles of current. While it's not quite a life-and-death matter when equipment operates at 55 or 57 cycles, it is desirable to operate it at the 60-cycle norm for which your recording equipment motors are designed.

A visual indicator of the vibrating reed type is satisfactory in that you can set it in advance and then—even though you may want to keep an eye on it—feel reasonably sure that it's staying within a fraction of the desired 60 cycles.

In a previous article, we discussed the pros and cons of magnetic tape versus magnetic sprocketed film. Regardless of which medium you choose, there will be some other decisions to make. One of them is tape quality. There is an accepted basic or "normal" quality of recording tape on the market. It's what might called a commercial tape—not extra thin, not extra thick, or extra this or that. Just an overall practical tape such as Minnesota Mining's 111-A.

It is advisable to avoid the extra thin tapes unless you or your sound recordist are familiar with the steps necessary to prevent over-modulating. Why? If too loud a sound signal is put on the thin tape, it is likely to "print through." That is, some of the sound on one layer of tape will transfer to the adjoining layers.

Using magnetic film instead of tape, the print through problem is practically non-extant. In choosing magnetic film for your recorder, you will be offered what are termed high-level films. Our experience has shown that there is little, if any, need for special type magnetic films in normal recording work. If good, standard brands of magnetic film are purchased, no difficulties are likely to be encountered if the tape is used properly.

At the Calvin Company, we prefer to use magnetic film in 400-ft. rolls because they match in length the 400-ft. rolls of film we use in our motion picture cameras. When both the picture and sound are shot and recorded at the same speed—36 fpm—the two mediums match up scene for scene and ease the editing chore considerably.

Earlier in this series we mentioned that tape is easier to transport and store than magnetic film. What we meant is that the sound for more takes can be recorded on a single roll of tape than on a roll of film. It is possible to record the sound for two to three 400-ft. rolls of negative on a single roll of tape. While this is a convenience, we would not consider it a vital point in the decision as to whether you should use tape or film.

There are some important things to remember about the care and handling of magnetic film or tape. Both medi-

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ums may be considered on the delicate side in that they should never be exposed to high magnetic fields, nor extremes of heat or humidity. There have been cases of "print through" from one roll to another resulting where the recording medium has been exposed to high temperatures. So for safe storage while working in the field, all tapes or films that have been recorded should be kept in clean, dry, non-magnetic containers and in a cool place—or at least well-protected from heat of the sun.

One of the most important accessories used in sound recording is the microphone boom — an item that is available in a wide range of design, construction and bulk. There are mike booms that are hand-held during shooting, and others that are mounted on mobile tripods or other supports. Some small production operations have done fairly well by simply hanging the mike overhead on some convenient object above the set. But if there is nothing above the set on which to hang the mike, then some sort of boom must be employed. There are a number of small booms on the market that can be considered reasonably convenient, but not as convenient as some of us would like them to be. Too many commercial booms are bulky and unduly heavy to handle.

At Calvin, we have made our own booms, using sections of aluminum tubing with the ends threaded so that several sections can be joined together. Each section is 4-ft in length, and we find that we can easily manage a boom made up of three sections. On the far end is a mounting device for the microphone, and the mike cord is usually taped along the length of the boom. The result is a "fishpole" type of boom —use of which usually presents still another problem.

It is not physically possible for a man to hold a twelve-foot boom (with a mike on the far end) overhead and out straight and hold it very long! To solve this problem, we built a simple support using two 4-foot lengths of aluminum tubing, which were crossed off-center and joined with a bolt. With this support set up, the mike boom is simply rested in the crotch of it, thus relieving the boom operator of the fatigue that usually follows when a fishpole boom is held for long takes.

The careful monitoring of sound on location is a matter that is too often neglected. Monitoring has but one purpose: to enable the sound men to get the best possible results with the equipment available. All too often, however, monitoring does *not* help the sound.

We have grown accustomed to hearing a producer say, while listening to a recording he made on location: "Well, I never heard that! I wonder where that noise came from?" Obviously, the noise was in the original recording, and it could have been detected in the monitoring process, and corrected on the spot.

Film makers should realize that you cannot expect to do better sound recording than you can appraise — or that you can monitor. If, when recording on location, you cannot hear what you are recording as it is being recorded how can you be sure what's actually recorded on the tape or film until you are back at the studio and it's too late to do anything about errors?

Monitoring sound in the studio does not pose the problems it does when shooting on location. In the studio, if you have assembled the best equipment available within the limits of your budget and knowledge and you establish a standard or norm to serve as a yardstick in the monitoring process, anything that varies from that standard will be readily apparent and you can thus correct it immediately.

It's a different matter, however, when you're recording sound on location. Here there is no standard listening condition, and in addition there are usually a myriad of other sounds coming to your ears. So if you want to improve the efficiency of your monitoring, use a good set of padded earphones during recording sessions that are capable of excluding all extraneous noises.

There is another precaution you can take—one we invariably follow when shooting and recording sound on location. At the close of the day's work, we make it a practice to re-monitor all sound recorded during that day. This we often do in our hotel room, where in peace and quiet we can listen to our sound tracks, completely relaxed and invariably with a more critical ear.

One might surmise that it's a little late to discover that you have a couple of bad sound takes after the day's shooting is over; but it's a lot better than discovering it, perhaps weeks later, after the company has returned to the studio from location.

In conclusion, we might list here a number of smaller items that will add to the convenience of achieving a good recording job. A roll of paper tape has proved a handy item many times for us. A length of it is used as a wrapper around each roll of tape or film. It not only serves to hold the medium in place but provides a convenient place on which to pencil identification data, etc. Still other items are grease pencils and ball point pens—ideal for writing on either paper tape or film. An extra microphone cable will often prove a time saver as will extra extension cords. Finally, there's one important item we never forget. That is an iron stake, about three feet in length, which is driven into the earth on location as a ground for our recording and power supply equipment.

As in all endeavors, it's the little things that—overlooked or forgotten—can greatly affect the expected sound recording result. ■

FILMING A WINNER

Continued from Page 181

he would creep back, gently pull back the twigs and start his camera. Often because the nests were so well hidden, he was able to observe the action only through the reflex viewing system of his camera.

When the eggs in one of the five nests began to hatch, he was on the spot minutes later to record the baby nightingales. Later, by filming older birds in other nests he was able to capture in a few days time the apparent growth of one group of chicks into fledglings.

Shots of adult birds proved difficult to make even with the use of telephoto lenses. Pellegrini spent many hours tramping through his boyhood haunts, before he succeeded in filming the scenes necessary to his script. Many less-patient photographers would have given up before half the work was finished.

To obtain night scenes of the meadows that surround the woodlands in which the nightingales dwell, he had to shoot "day-for-night." He used a Wratten 80B filter with daylight-type Kodachrome and made no compensation for light loss. The results are quite professional.

Pellegrini also made effective use of his zoom lens. To show the boy and girl meeting in the forest for the first time, he felt the scene needed special impact. He pictured the youth preparing to fire a rifle at a paper target

tacked to a tree. As the young man raises the weapon to his shoulder and is about to shoot, the girl steps into the frame. The lens zooms in for a medium shot of the target with the startled girl almost in the line of fire.

In a more serene shot at the beginning of the picture, Pellegrini used the zoom lens to show the habitat of the nightingales. He began with a long view of the meadow and zoomed in slowly to the forest in the background. Thus, with one shot he set the locale for the ensuing scenes of the birds. This portion of the film is further enhanced by cricket chirps—actually recorded in Italy and dubbed in later on the sound track.

One sequence toward the end of the picture combines shots made both in Italy and the United States. It shows the youth setting a trap to capture a live nightingale which he plans to give to the girl. The boy baits the trap with a worm. Suspense is built as the camera cuts several times between the wire cage and an approaching bird. Suddenly the camera zooms down to the door, simulating the flight of the nightingale, and the trap snaps shut. The musical accompaniment hits a peak and then there is silence, broken seconds later by chords struck on a piano.

To obtain shots representing a bird's eye view from inside the wire cage, Pellegrini—after returning to his home in San Francisco—reconstructed a trap such as was used in Italy. He even imported live worms from Italy for the scene!

Back home, with his film processed and countless hours spent in reviewing the footage prior to the editing, the difficult special effects work was begun to make the tie-in shots he now found so vital to create the smooth continuity that marks his completed work. A synchronizing device was constructed to link up his Bolex camera and his projector in close proximity to a small projection screen. This set-up enabled him to re-photograph, for the required optical effects, certain scenes which had been shot in Italy.

An example is the demand in his script for a shot of fireflies on an Italian meadow at dusk—a scene almost impossible to film by the most astute professional. So trick photography and animation were resorted to to produce the desired shot. Here one of the day-for-night shots, previously mentioned, was combined with a short sequence of animation that represented blinking fireflies in motion.

The fireflies were produced by animation in the following manner: Instead of the usual acetate animation cels, Pellegrini used white sheets of paper on which a pattern of black dots were inked, according to a predeter-

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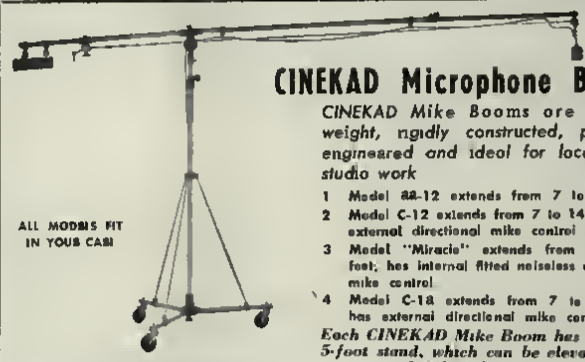

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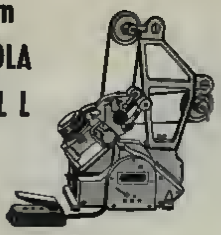

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mined pattern. Succeeding sheets had the dots moving progressively across the camera field. The desired blinking effect for the fireflies was imparted by omitting alternate drawings during animation photography. The dots were shot on black-and-white negative, which after processing produced a film with white spots on a black background. Then to give these spots the necessary color or tint to complete the illusion of fireflies, the length of film was then re-photographed, frame by frame, on Type A Kodachrome as it was projected on a tinted screen. Afterwards, this footage along with the shot of the meadow at dusk was sent to a local film laboratory where it was combined by optical printing on a single strip of color film.

Pellegrini used his homemade devices in numerous ways. He needed a shot of two adult nightingales together, but had been unable to photograph two birds together in a closeup. He turned to his basement workshop for the solution. He produced the desired shot by projecting and re-photographing two shots of individual birds, masking first one side of the frame and then the other. This masking and multiple-exposure technique also was used to make a montage of five nightingales.

A slightly different method was employed to make a shot of two birds facing each other. In this case Pellegrini selected a few feet of film of one nightingale and used it to represent two. He first projected and re-photographed the bird from his midget screen on one half the film. Then he rewound the roll and shot the unexposed portion from behind a frosted glass as the same clip was projected on its surface. The resulting shot shows two nightingales facing each other as called for in the script.

Thus, camera trickery was employed to add to the story where certain shots could not be made on location.

Pellegrini recorded most of the sound effects for the picture in Italy. Most difficult to obtain perhaps, were the calls of the nightingales. Contrary to popular belief, these exotic birds sing more beautifully during the day. But to complicate his work, he found that there were too many interfering noises in the daytime and he had to record in the middle of the night. He used a Stancil-Hoffman portable Minitape and later dubbed the sounds along with music and narration onto the magnetic stripe which was added to his film.

Thus, patience and hard work paid off when Pellegrini was awarded the PSA Gold Medal for his achievement. In addition he accomplished what he had set out to do—to capture in motion pictures and sound some of the memories of his childhood. •

TV NEWS—GROWING MARKET FOR FREE-LANCERS

Continued from Page 169

credit to his having started as a correspondent.

Imaginative and productive TV news stringers develop from a wide range of fields, as exemplified by the two cases reported here. Atkins was first a newspaperman, Salerno a high school student. WAPI-TV's News Editor Charles Davis disclosed that most of his stringers work in fields allied to television, or are students of journalism or cinematography.

Television's correspondent cinematographers invariably start out shooting with one of the inexpensive 16mm cine cameras. As soon as they start getting checks for their work, they put the money right back into the business—buy more professional-like cameras and equipment. Because there is a steady demand for news footage with sound, more and more stringers are investing in 16mm Auricon single-system sound cameras. For the really productive cameraman, this means higher free-lance fees, more specific assignments from TV news editors, and the possibility of commercial jobs from local advertising and public relations agencies.

Pay for correspondent cinematographers varies around the country, depending on the size of the station, the length and importance of the TV news shows using films, and the station's budget. WAPI-TV Editor Davis pays his 25 correspondents at the rate of 50 cents a foot for film used on the news shows he edits. WBRC-TV Editor Atkins figures more on a basis of $5 to $15 for silent footage and $15 to $25 for sound footage. Both are limited in the amount of air time they have for live and filmed news, so every second of filmed footage must count.

Davis said his station keeps a por-

tion of the cash he receives on jobs shot for NBC, but Atkins said as a free lance photographer he received $75 from NBC for his first sale to them—a film of a tornado in which 22 were killed. He has received $100 for sound film clips of integration incidents used on networks coast-to-coast.

The importance of editing in the camera was stressed by both news editors who are very busy men and don't have a lot of time to edit films taken by stringers who have overshot on their subjects.

In advising those selling to the networks, Atkins says, "Know your plane schedules and make sure that film is on the plane to New York in time for the network news deadline even if it means shooting only the first five minutes of a very important murder trial."

On the basis of exposure and composition, both Atkins and Davis find the quality of footage submitted to them to be surprisingly good. Their complaints are more on the non-photographic side of stringing.

They listed the following do's and don'ts that are given their own stringers and prospective stringers to follow. These are also applicable to other motion picture cameramen around the country interested in selling newsworthy film footage to TV. They are:

1. Keep your camera handy and loaded at all times. (Both Birmingham stations, incidentally, furnish their correspondents with film gratis.)

2. Keep informed on upcoming news events by reading your local newspapers and listen to your local radio news.

3. Shoot first and ask questions later.

4. Get the facts on a news event after shooting and send it to the station. Many a free lance sale has been lost because the photographer didn't bother to send along facts about the filmed news event.

5. Call the station collect, once you have filmed the event and give the editor all the particulars; also advise what bus, train or plane your film will arrive on, and give the waybill number. If the station doesn't use your film, usually they will replace the footage you shot with a comparable amount of unexposed film, and you learn something about why the footage submitted wasn't usable. But don't wear out your welcome by overdoing the collect call bit.

6. Know your local plane, train and bus schedules backwards and forwards.

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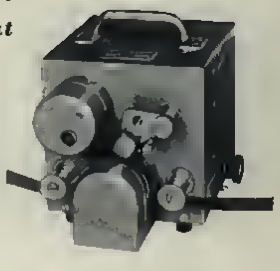

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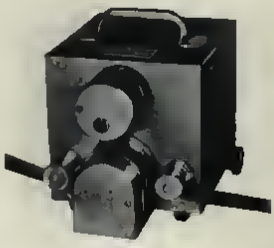

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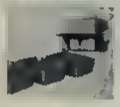

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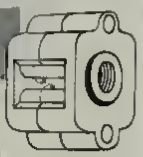

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8. Edit in the camera. Overshooting may cost you a sale.

9. Develop helpful local contacts such as the fire chief, police chief, mayor, sheriff, judges, chamber of commerce manager and any others who may be able to help you with news tips and information.

10. On visits, and in telephone calls, limit your conversation with busy TV editors. (Everybody thinks his story is the most important!)

11. Keep a careful record of all films submitted so that you can bill the station if they don't pay promptly. But if your film is sold, don't expect it back, you will get replacement film for your camera.

By following these suggestions you can enhance your chances of succeeding in a well-paying free lance sideline or perhaps a full time job in TV film photography. The opportunities are everywhere. ■

OPERATION "RESTORATION"

Continued from Page 177

most interested in the preservation of examples of its humble beginning, is most reticent in backing up with cash any program for early-day film restoration and preservation. It should be a simple matter, it would seem, for the motion picture industry to allocate a small per cent of its profits for this good work.

As more and more of the old films are restored and made available for screening, motion picture photographers will discover much of interest in the techniques of early-day cinematography, which are revealed in these films—especially those made around the turn of the century.

Cinematographers of today are frequently heard describing some "new idea" that they tried for the first time in photographing a certain film. Actually most of these "new ideas" were old and forgotten before they were born. The French artist and film producer George Melies, whose name is better known than his motion pictures, originated and put to practical use many things which cameramen who followed years later re-discovered.

Points out Niver: "Everything that has ever been done in cinematography was done within five years after the invention of the moving picture camera. Such things as fades, dissolves, wipes, rear-projection, animation over live action, and underwater photography all were done prior to 1895." And Niver has old motion picture films to prove his statement. "The Melies films," he says, "display a remarkable talent for the execution of special effects that today require a large department of specialists in the major studios. Melies not only made all of his effects in the camera, but did all the work single-handed.

"The reason that Melies is not as well known as other cinema pioneers," Niver explains, "is that most of his pictures had been destroyed or were forgotten by 1912. Historians say that in later years, Melies became annoyed at the world in general and burned all his film negatives. Fortunately a limited amount of his footage is in existence, and it has been Niver's good fortune to have had opportunity to restore some of it to acetate safety base. In his work for the Academy of Motion Picture Arts and Sciences, Niver has restored 150 Melies films.

It was Niver's thirst for knowledge of early-day cinema history that indirectly led him to the work in which he is now so avidly engaged. He was a frequent visitor to the Academy's library of movie memorabilia and it was here that he learned of the Library of Congress' quest for a method of converting its thousands of rolls of copyrighted film records to projectable motion picture film. The Library had placed its problem with the Academy for solution. The Academy in turn had tried to interest certain Hollywood film laboratories in the project, but without much success. Because the latter's methods were tedious and consequently quite costly, not more than a hundred feet of film was ever restored by them.

The restoration idea intrigued Niver and he set about to build equipment which he hoped would enable him to succeed where the professional labs had failed. And that is exactly what he did. He first experimented with a few rolls of the paper prints, loaned to him by the Library. The first problem was to find out how to unwind the rolls of paper without causing them to disintegrate, most of them had lain dormant

in musty storage rooms in Washington for more than half a century and it is understandable that paper could deteriorate in that time and that almost anything could happen to the photographic emulsion applied to it.

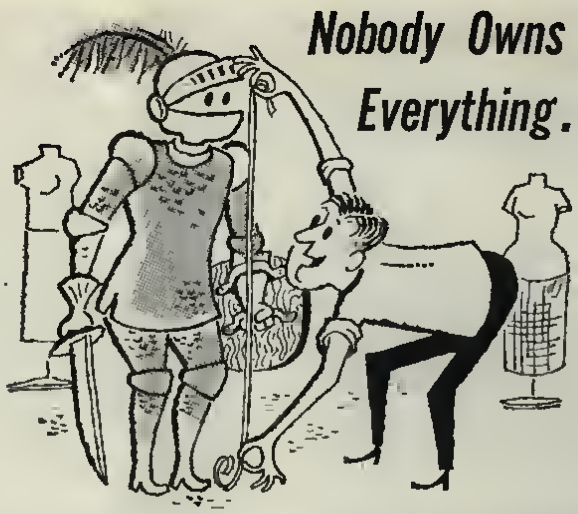
Following a little technical research, Niver came up with a method of bathing the rolls of paper in a chemical then washing them in clear water. This softened the paper base so it could be unwound without cracking. The rolls were then wound on a drum-type drying rack, such as used in film processing labs, then rewound the paper strips after drying on ordinary thousand-foot 35mm film reels.

"Because of the inherent error in the paper," Niver explained, "it was impossible to match the paper prints to any existing modern film laboratory equipment. Many of the prints had been photographed with motion picture cameras having no sprockets and therefore there were no sprocket holes in the prints by which they might be moved progressively through a machine for copying by existing laboratory equipment." So devising a means of securing accurate registration in the copying procedure was the first major problem tackled.

"In the beginning, I registered the prints by hand—one frame at a time, and made each exposure manually after alignment had been made. Using a spring-wound motion picture camera, the copying process was a long drawn out and tedious procedure. But it was by working this way that I was able to find out if my ideas for restoring the paper prints would work."

Niver recalled the laborious "cut-and-try" method he followed in setting up his first copying equipment. "I bought a spring-driven 16mm camera and mounted it on an enlarger stand. On the baseboard I mounted an inexpensive T-square to provide a straight-edge or path of travel for the film. Each time I would add something to this straight-edge to improve the set-up, I would discover new problems: that the paper strips were wider in some places than in others, that the rolls had been rolled up (fifty years or more earlier) while still wet, with the result many images were larger on one side than the other; and that in order to achieve satisfactory registry I would have to use a camera that would enable me to see the image directly through the taking lens.

"So I purchased another camera—



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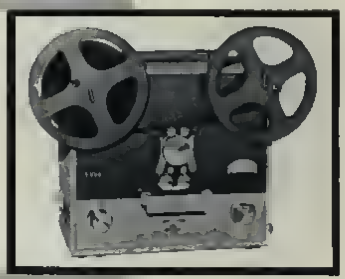

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one having this feature, also a sturdy lathe bed to mount it on. And all the time I would be asking a lot of questions of a lot of people and getting a lot of answers—not all of them good. I encountered plenty of skepticism.

"But after the first fifty feet of paper was run off, copied and printed on acetate safety base, the project began to generate a lot of interest."

It wasn't long before the Library of Congress found more work for Niver to do. Having now restored some 75,000 feet of paper prints to film for the Library, he was asked if there was anything he could do to restore "some rolls of old film which look very peculiar." Niver asked that two or three reels of the film be sent to him for study. The restoration problems were essentially the same as for the paper rolls, except that some of the film was so far deteriorated that it would almost disintegrate on touch.

Before this film could be handled, it was necessary to work out a method of keeping it intact during the conditioning and copying steps. It was about this time that Niver, attending a party, observed a fellow celebrant roll a cigarette in a piece of cellophane, then tie a knot in the cigarette. Niver was struck with the toughness of the little piece of clear plastic and he began to think how it might be applied to strengthen and hold intact the old historical films now in his hands for restoration.

Result was he devised a means of sandwiching the strips of film between two strips of plastic—this time Saran Wrap, instead of cellophane. It worked, and enabled him to put the films through his copying machine with success. Certain alterations had to be made on his machine for film however.

By now there was a definite need for a method of moving the film progressively through the copier by motor power, rather than by hand. This was the first problem tackled and solved, and today the film is moved forward to bring each frame into position for copying at a slow but steady rate by means of friction grips, rather than by sprockets. Sprockets were out of the question because the film was badly shrunken and the rate of shrinkage varied throughout each roll. So correct alignment of each frame depends upon the watchful eye of the machine operator who observes the film through a magnifying glass and makes any adjustment necessary to move it further forward or backward to attain alignment by a hand wheel geared down 200-to-1 to afford precise vernier adjustment.

"When a roll of old film is presented for restoration," said Niver, "we first estimate its condition by examining the first 15 or 20 feet. Then, through careful measurement, we determine the progress of error in frame line position due to film shrinkage, and set the automatic advance of our equipment accordingly so that much of the correction is taken care of automatically, and leaves only a minor portion of it to the machine operator."

To date Niver has converted about 200,000 feet of paper prints to film, and a like amount of nitrate film to safety base acetate. The film project goes faster than the one for paper, said Niver, who pointed out he can run a thousand-foot roll of nitrate through the copying machine in about six hours, whereas it takes about three days to copy the same amount of paper footage.

We asked Niver what the future holds for him in this unique enterprise. With a touch of modesty he said: "I've come to feel I have a sincere duty to perform in preserving the last chapters of the motion picture industry, in view of our developments and of the fact ours is the only equipment and process that can do the work. I'm dedicated to do what I can in this respect. It's a sort of labor of love with me, although I'll be glad when the business finally starts to make money."

Just as we were about to go to press with this report, Kemp Niver revealed that the New York offices of Paramount Pictures had sent him a 350-foot length of film—part of the negative of the memorable old silent hit "The Covered Wagon"—and asked if it were possible to make a dupe negative—at the same time re-positioning the frames to Academy Aperture to permit adding a sound track, and also speeding the picture up to sound speed. They also sent along

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another piece of badly-shrunken nitrate—a night scene of a sinking ship—for restoration.

"I copied the 'Covered Wagon' footage by manually controlled stop action and printed every 2nd frame twice to bring the film action up to sound speed. A letter just received from Paramount expressed their delight with the results."

The market for Renovare Film Company's services seems infinite in scope. "Almost every motion picture company is a potential client," said Niver, "especially companies wishing to market their old films to TV. Only recently one TV network submitted to us a 2-page list of old films they wished converted to safety base acetate."

It looks like Niver's going to be pretty busy from now on.

NO INTERIORS!

Continued from Page 167

the sky down in these scenes," said Guffey, "thus rendering a measure of under-exposure in the sky area, making it appear darker—a deeper blue. The 85 filter, normally used for day shots, was omitted and the lens stopped down to slightly underexpose the overall scene."

The chief photographic problems encountered on this picture, Guffey explained, was in photographing the day-for-night sequences. "We'd start shooting in the morning and the sunlight would be on the side of a cliff or a mountain, for instance, and we'd continue shooting scenes for the same sequence for two days. During the day, the sun would travel its usual route from east to west, altering the light on the backgrounds of the scenes. In the afternoon, the main light source would be coming from the side, where possibly it was providing full front lighting when we started shooting earlier in the day. The problem was one of visualizing the sequence in terms of pictorial and illumination continuity, and planning camera setups accordingly in order to keep the lighting pattern more or less constant."

Crosslight, Guffey explains, is best for day-for-night shots made in color, especially for scenes that include people, so that one side of faces will be lighter than the other. Backgrounds, he added, should have the same off-balance lighting characteristic. "Of course, this isn't always feasible," he said, "because if you start shooting day-for-

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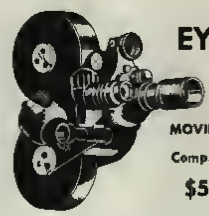

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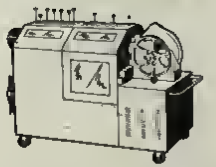

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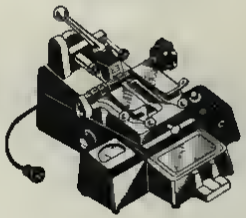

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night in early morning hours, you can't stop shooting at noon simply because the sun is now right overhead."

Faces of players require a lot more light in day-for-night shots, Guffey explained, because it is necessary to stop down the camera lens in order to make the background look like night.

To successfully shoot day-for-night scenes in color that include people, the important thing is to obtain the proper balance. And as there is no established ratio for this, we asked Burnett Guffey what procedure he followed in photographing such scenes for this picture. "I determine the right contrast from experience—using a contrast viewing glass, of course, to check contrasts before the camera starts rolling on a scene."

There was a great deal of cavalry action filmed for this picture and for these scenes Guffey had at his disposal a giant Chapman camera crane, a Blue Goose (a rugged mobile camera car with a vertical hydraulic lift for the camera and crew) and a portable tubular steel parallel of undetermined height — all of which were used in photographing the panoramic scenes of horses and riders from three different vantage points. Incidentally, Guffey used the rugged and versatile Chapman crane for making nearly 90 per cent of the shots for the picture.

There was still another mobile camera carrier which Columbia Studio provided for this picture. To make the many running shots required of the band of U.S. Soldiers who travel by handcar over railroad tracks in the last stages of their flight to Cordura, Columbia engineers designed and built a special camera dolly that would operate on a standard guage railroad track. The dolly carried, besides the camera, Guffey and his crew, the director, script girl, gaffer, two booster lights and a sizeable supply of power cable. It was anticipated that the uneven railroad tracks would induce unwanted vibration for the camera, so the dolly was fitted with rubber tired wheels designed to cling to the tracks, and its axles mounted with tubular springs. From the point of smoothness and flexibility, the dolly performed as smoothly as any track-controlled dolly on the sound stage, Guffey said.

For the man whose black-and-white photographic artistry was recognized by the Academy of Motion Picture Arts and Sciences in 1954 with an "Oscar" for filming "From Here To Eternity," "They Came To Cordura" presented him with an equally challenging opportunity with color film. As in "Eternity," Guffey found opportunity as well as challenge for his talents and imagination.

"A story such as this backed by an outstanding cast, plus an understanding director can—and did—provide a wonderful incentive for a genuinely creative approach in the photography," Guffey concluded.

FILMING THE BOB HOPE CHRISTMAS TOUR

Continued from Page 179

Linkletter's "People Are Funny" TV show, on which he functions as "resident" Director of Photography.

As a rule, cinematographers are reluctant to intermix two emulsions of varying speeds in the same sequence, but this was accomplished with such skill on the Bob Hope European show that it is impossible to tell in the final cut just which emulsion was used on what scene. Moreover, all the footage shot readily printed in the middle of the Cinex scale. It is a tribute to the laboratory that such uniformity of grain characteristic and contrast between the two emulsions was maintained.

On a trip such as this, with its obligatory tight schedule, it was essential that all equipment be highly portable as well as functional—capable of being quickly set-up and just as quickly torn down when a segment of filming was completed. Compact, portable lighting equipment was therefore a "must." Stensvold's principal lighting equipment consisted of four Masterlites that readily fold into suitcase-type containers and which utilize aircraft landing light globes. These lights would have struck the average observer as being ridiculously inadequate; yet by means of careful placement, it was possible to obtain from them a smoothly-modeled illumination ranging in intensity from 200 to 225 foot-candles. Only in Berlin, Naples and Madrid, where areas larger than usual had to be covered, was supplementary lighting equipment added. This consisted of two 10 kilowatt "Senior" spotlights.

The crisp, clean quality of the show's photography is largely due to use of "liners"—backlights which rimmed the subjects in light, and separated them from the background, making them stand out clearly.

Electric current was one problem which Stensvold did not have to concern himself, as it was the responsibility of the Air Force to see that a "hot" line was available at each stop. He was never sure whether the current came from direct sources or generators, but the Air Force never failed to have sufficient power on tap to run the equipment, no matter how remote the spot.

A special lighting problem presented itself in the filming of Jerry Colonna's scenes in the show. Colonna worked right in the audience, which meant that a quick shift was necessary to re-direct lights and cameras from the stage to the audience area. By dint of careful pre-planning and practice it was found that this change could be made by actually re-positioning only one camera and one light. The entire adjustment took just under two minutes and was accomplished with a minimum of interruption to the flow of the program.

"Locations in foreign countries always present unique problems," Stensvold explained, "but perhaps the most pressing photographic problem on this trip was the fact we constantly had to film our shows without obstructing the view of the audience, an almost impossible challenge if ideal camera angles were to be achieved. But, after all, these shows were being staged primarily for the entertainment of the service men and only secondarily for the American television audience. So we had to conceal our cameras or place them where they would create the least possible visual interference. We always tried to shoot those segments first that required coverage by our side cameras, so that these could be struck and removed as

NEXT MONTH . . .

. . . HAL MOHR, Vice-president of the American Society of Cinematographers, gives a professional Hollywood cameraman's view of the future of Video Tape Recording in the motion picture industry, its great potentials, and what opportunities it holds for Hollywood's Directors of Photography, based on his studies and actual experiences with VTR equipment in a recent sound stage demonstration by Ampex, in which he participated.

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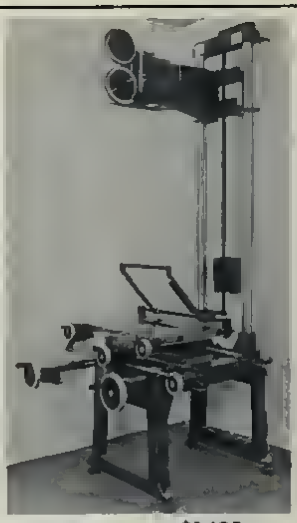
early in the show as possible. Also, our crews were trained to duck down out of the way when they were not actually shooting. Invariably we managed to get what we needed without depriving the service men of their entertainment."

Since many of the shows were filmed outdoors, weather conditions proved a constant photographic nightmare. The crew was plagued with almost continuous rain and overcast skies along much of the route, so that exposure control became a minute-to-minute hassle. In Naples, for example, the show was presented on the flight deck of the giant aircraft carrier USS Forrestal, which was anchored in the harbor. The sun played a rapid game of hide-and-seek, forcing the cameramen to keep adjusting aperture openings anywhere from f/2 to f/22. Halfway through the show rain began to fall and the show, the audience and the cameras were moved onto the hangar deck. It is difficult to believe that this deck could accommodate an audience of 7,000 plus entertainers and technicians, with room left over for the carrier's planes, but such was the case. An even more incredible fact is that all scenes shot on the Naples show, with its wide variety of exposure conditions, printed within three printer lights of each other in the lab.

Speed and precision characterized the operation of the camera crew from the very beginning. The first stop for a show after leaving Los Angeles was McGuire Air Force Base in New Jersey. Here all the equipment was unpacked and set up, the show filmed, and the equipment struck and loaded back on the plane—all within the space of three hours.

One problem which had overtones of comedy revolved about the fact that in Europe, Stensvold had to direct technicians who spoke no English and whose language he did not speak. In Madrid, for example, he was joined by two Spanish crews composed of excellent technicians. They did not, however, have any communication in common except sign language. While Stensvold was linked by intercom to his American crewmen, he relied upon elaborate arm signals and symbols painted on huge cards which indicated the various f/ stops he wished the Spanish camermen to use. To many, Stensvold's energetic performance of waving arms and flashing of cards was even more entertaining than the program taking place on the platform.

THE NEW PORTMAN ANIMATION STAND



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In Madrid the troupe was joined by glamourous international movie star Gina Lollobrigida. Rumors had preceded the lady that she was highly temperamental and had insisted upon having her own director and cameraman. When Miss Lollobrigida appeared, she turned out to be a most co-operative and gracious performer who took direction well and who rather disappointed everyone by not indulging in temperamental fireworks. After the filming of her contribution to the show was completed, she and her entourage viewed the footage, and she expressed her delight with the photographic results.

"There was never a dull moment on this trip," Stensvold recalls. "We had plotted all the set segments of the show well in advance, but at each stop new acts were added, and Hope's writers would have to dream up added business and dialog for both Hope and the local entertainers. We had no chance to rehearse the routines of the added local talent so it became a matter of keeping on our toes to catch whatever happened and to be 'on' the right person at the right time with the right camera and lens."

Alan Stensvold is an old hand at tackling knotty cinematographic problems and causing them to work out the way he wants them to. He started his professional career as a commercial airlines pilot. While he was a giant in the skies, he was physically somewhat less than that, and one day when one of his bosses told him: "Travelers don't have confidence in big airplanes flown by small pilots," he quit in disgust, and after a brief career in journalism on the San Francisco Bulletin and the old Los Angeles Express, he drifted into photography.

He first started shooting motion pictures in San Francisco in 1932. By 1936 he had migrated south to Hollywood where he became a very busy cinematographer. He soon became known as a color specialist in the field of commercial and industrial films. He still prefers black-and-white cinematography to color, since he regards it much more of a challenge. His most recent assignments as Director of Photography include "Thunder Road," which he shot for Robert Mitchum in North Carolina; "Catch Me If You Can," filmed for RKO-Teleradio in Cuba, and a spectacular for CBS-TV titled "The Beverly Hills Story." Despite these extra-curricular activities, he has continued to direct the photography of the popular weekly Art Linkletter TV show, "People Are Funny."

THE MITCHELL CAMERA

Continued from Page 175

isms. The right hand side contains the movement drive shaft, two grease plugs and the film buckle trip plunger. With the BNC, the dissolve rack lock tension adjusting knob and electrical connector are also on the right hand side. The focusing tube is an integral part of the door on the right side. The motor is attached to the drive side by means of two thumb screws and a sliding latch mechanism. On top of the camera is a recessed plate for attaching the film magazine and an opening through which the film is drawn from the magazine to the film compartment of the camera.

On the NC model the upright section of the camera base holds the lens turret and the four-way matte mechanism. There is no lens turret on the BNC model; the lenses are mounted individually on the outer case and are held in position by a bayonet type lock. The horizontal section of the base incorporates the gibs and racking mechanism for shifting the camera box from the photographing position to the focusing position. The view finder is mounted on a dovetail bracket on the upright section of the base. Another bracket on the horizontal side of the base serves to support the view finder and has provisions for adjusting the finder for parallax.

The main drive shaft of the movement extends through the right hand compartment of the camera box, coupling directly to the motor drive shaft, and by means of a series of gears and worms operates the camera. The film is drawn from the magazine and fed to the movement by a sprocket with 32 teeth. The eccentric movement moves the film intermittently and holds it in position for the exposure of each successive frame by means of two sprocket guide assemblies. A pull-down claw moves the film into place behind the aperture, and registration pins on a horizontal shaft hold the film stationary during exposure. Both models feature the Academy sound aperture, which is 0.631"x0.868" and is located 0.056" off center of the film.

On the NC model the rotary dissolving shutter is designed for hand-operated dissolves and fades. It has a maximum opening of 175 degrees, calibrated in increments of 10 degrees, and can be closed down to any smaller opening for filming. The shutter opening scale and hand dissolve lever are mounted on the rear of the camera, as is a miniature monitoring shutter that shows visually the relation of the shutter opening to the aperture. The shutter is synchronized with the movement so that when its open segment is in front of the aperture the film is at rest. The film moves while the opaque segment of the shutter covers the aperture.

The shutter on the BNC Model is of the automatic dissolving type. Two buttons at the rear of the camera operate the shutter automatically to make a four-foot fade in or out. A hand dissolve lever is also provided. The shutter itself has the same size opening and other general characteristics as the NC Model.

The focusing tube affords precise focusing and framing through the camera lens. Its aperture is sized and positioned to correspond exactly with the camera aperture. When the camera box is racked over to the right, the focusing tube is positioned behind the lens, making it possible to observe for focusing and framing purposes the scene directly through the taking lens.

On the BNC Model there are three focusing and parallax controls—two on the front of the camera and one at the back. Each control at the camera front consists of a hand-wheel with vernier adjustment and a white disc on which footage may be marked as a guide to making follow-focus shots. The third control at the rear of the camera has only the vernier adjustment. These controls, when properly engaged, synchronize lens focus and view finder parallax, so that as the focus is changed during the filming of a scene or in line-up operations, the view finder is automatically corrected for parallax.

On both the NC and BNC Models lenses are mounted in threaded focusing mounts having iris diaphragm control rings. Only NC cameras lenses have focus lockscrews. BNC lenses are locked in place by the gearing that focuses the lens.

The lens turret featured on the NC model is mounted on the front plate of the camera base and accommodates

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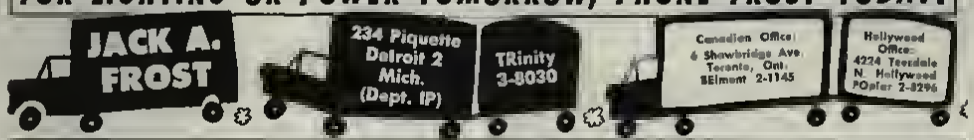

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four lenses. By rotating the turret each lens can be quickly and easily shifted to position before the camera aperture. A locating pin locks the turret when the lens is correctly placed. The locating pin assembly can be adjusted so that the lens will be centered exactly over the camera aperture or so that the lens will be centered above or below the center of the camera aperture. The latter positioning produces the effect of a rising or falling front to produce an adjustment equivalent to a 15 degree tilt of the tripod without the usual distortion due to photographing at an angle.

Various types of motors may be used to drive Mitchell cameras. For synchronized sound work, synchronous or interlock type motors are used. A motor adapter door is supplied with both models. This permits the use of a variable speed or "wild" motor for process work, non-synchronous work or special studio laboratory shots where sound insulation is not a factor to be considered. The interlocking or synchronous types of motors are mounted in insu-

Continued on Page 197

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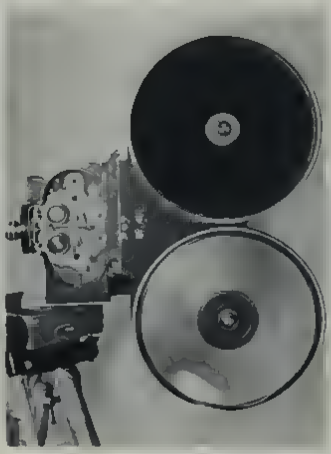
Designed to accommodate all standard 16mm and 35mm cameras and stop-motion motors is the Oxberry Model S animation stand, which features electric zoom, underlighting, top lighting, and E.W.N.S rotatable compound. Zooms from 3 to 12 fields are possible with a 25mm lens—larger fields with a 15mm lens. Compound rotation is calibrated for 360° and moving parts are ball-bearing. Two peg tracks accommodate 7 removable pegs. Table top size is 21"x27" and is 39" high. List price is $3,950. Eastern distributor is Camera Equipment Co., New York, N.Y.

Pump Filter

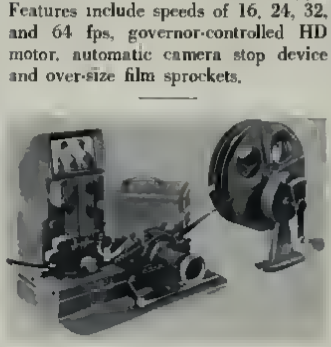
A portable, plastic-encased pump and filter unit for photographic processing equipment is announced by Oscar Fisher Co., Inc., Newburgh, N.Y. Unit removes all particulate insoluble matter from 5 microns up to and including some from 5 microns down. Solution exits from filter clean and clear at rate of 10 gallons per minute. Filter cores are readily replaced when required in less than a minute. Unit comes complete with electric switches, wiring and piping; requires power source of 110 or 220 V. 60 cycles A.C.



16mm Long-Run Camera

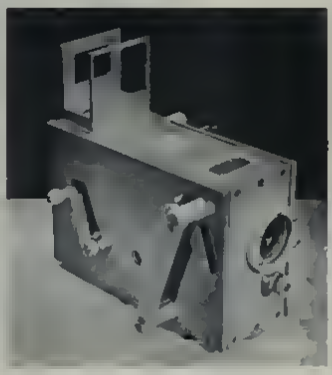
A new, high film capacity 16mm motion picture camera designed for filming rocket engine tests is announced by Traid Corporation, 17136 Ventura Blvd., Encino, Calif. Camera magazine holds 1200 feet of film—sufficient for a filming run of 50 minutes duration.

Trade-named the Model 805 Fototracer, camera is ruggedized, lightweight intermittent movement type. Features include speeds of 16, 24, 32, and 64 fps, governor-controlled HD motor, automatic camera stop device and over-size film sprockets.



Magnetic Sound Editors

A combination unit consisting of S.O.S. Action viewer and magnetic sound reader trade-named Magnoha is announced by S.O.S. Cinema Supply Corp., 602 W. 52nd Street, New York, N.Y. A compact editing unit for matching picture and sound track, the Maginola features bright 3"x4" picture, built in cue marker, frame and footage counters, 2-gang synchronizer with magnetic head, amplifier, and speaker unit. Forty-frame sprocket advances film 12 inches with each revolution. Fingertip release lifts permit each track to be handled individually. List price is $450. A DeLuxe model, featuring two magnetic heads—one for single-system and the other for double system sound—lists for $520.00.



16mm Underwater Blimp

An all-metal underwater housing designed especially for the popular Kodak K-100 camera is announced by Camera Equipment Co., New York, N.Y. Constructed of ¼" anodized dural, it features external controls for camera, viewing ports affording views of footage meter, lens settings, and spring wind. Accommodates camera mounted with a 10mm f/1.8 fixed focus Angenieux lens, and provides matching viewfinder. Handles mounted on right front and left rear sides permit operation of camera by photographer in either standing or horizontal position. Capable of withstanding underwater pressure at 75 feet, an accessory pressure valve will extend this range down to 175 feet. Weighing 30 lbs., size is 12¼"x9½"x12½".

Mike Booms

Cinekad Engineering Co., 763 10th Ave., New York, N.Y., announces a new line of portable microphone booms. Literature on line is available.

THE MITCHELL CAMERA

Continued from Page 195

lated sound-proof housings which fit directly on the right side of the camera. These motors are mounted in a horizontal position parallel to the camera, and the camera is driven by means of right angle gears and flexible coupling. Quick interchange of motors is facilitated by the fact no wiring changes are necessary when different types of motors are mounted, since the electrical receptacle connects the motor to the power lines. NC and BNC motors are not interchangeable due to slight variations in electrical connections.

On the NC Model the magnifying prismatic view finder is located on the left-hand side of the camera beside the focusing tube. Adjustable mattes, controlled by two calibrated knobs, may be set to mark the fields of lenses of varying focal lengths. The image seen on the ground glass is upright and correct as to right and left, and has a picture area of about 1⅞ by 3⅝ inches. With the mattes fully opened the field corresponds approximately to that of a 35mm lens. With the 25mm and 152mm lenses, adapters must be installed on the front of the finder to change the actual size of the image. This is necessary because the normal field of the 25mm lens is greater than that of the view finder, whereas the normal field of the 152mm lens is too small to be of practical value.

The view finder for the BNC Model is mounted on a bracket on the outer door of the camera. When the door is opened the finder is moved out of position, returning to its former position when the door is closed. The optics of the view finder for the BNC are similar to that of the NC view finder with the exception that with the former there are provisions for automatic focus. (Cams are provided for automatic parallax adjustment of the view finder when properly synchronized with the lens as previously described.)

In addition to the Mitchell NC and BNC, Mitchell Camera Corporation makes other cameras which serve important fields of motion picture photography. They include the Mitchell 16, designed especially for commercial, industrial and educational film production, and the Mitchell 35mm High Speed Motion Picture Camera, which is finding increasing use in scientific and technical research. Many of the basic features of the NC and BNC cameras are found in both the 16mm and High Speed models.

This concludes a necessarily limited description of Mitchell 35mm studio cameras. Next month the preparation and use of the NC and BNC for professional cinematography will be described. ■

ANIMATED FILM TECHNIQUES

Continued from Page 172

all of the colors that are to go onto a cell—numbering anywhere from six to several dozen.

The cartoon paint laboratory at Walt Disney Studios, where the mixing of the colors takes place, maintains a "library" of colors numbering over a hundred different hues, with seven values, ranging from dark to very light, for each hue, providing a total of more than 800 colors to work with. (A feature cartoon might well use every one!)

The problem of working out practical color-schemes for the characters is tackled by the layout-man and color-model department. Many considerations enter into choosing a color pattern for a character. The patterns must be fairly simple, so as to be easily animated. Complicated patterns involve a lot of extra work and expense. Inharmonious patterns are avoided as are colors that would be out of key with the background. Bright, uncompromising colors are hard to look at, and so, in general, the tendency is to use subtler, pastel shades in the coloring of characters.

The paints dry on the cells in about twenty minutes, but adhesion is not absolutely permanent. They eventually dry out and chip off the cell. In order to retard the drying-out, a relatively high humidity is maintained in the painting and camera departments.

After the cells have been painted, some of them may be side-tracked to special artists for shadows or other spe-

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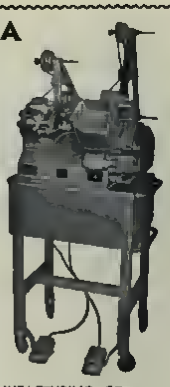

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cial effects. Shadows are painted with a semi-transparent paint, and the air-brush is used for adding dust effects, and certain types of highlighting, etc. For speed effects, where forms are streaked or blurred, the paints are dry-brushed on. At times, a dry-brush tone is used to help give roundness to a form.

Transparent shadow paint is only practical for small areas. Where the shadows are large, they are generally double-exposed onto the scene. In such case, the shadows are animated separately, painted in flat black tones, and after the scene has been shot once with the regular cel setups, the film is wound back and the shadows "d.x'd" on at perhaps thirty percent exposure. This method gives a natural transparency to the shadows that cannot be obtained by direct painting on the cel.

When painting is completed, the checking department again makes a final check of the technical correctness of the mechanics of the various scenes and if all passes muster, the cels and finished backgrounds are sent to the cameras to be photographed.

The photography of a cartoon is the most mechanical procedure in the entire production process, and it is one of the most exacting. The instructions on the exposure sheet must be followed down to the last frame. It isn't a matter of simply placing the cels under the camera and pushing a button to expose the film. Pan moves, tabulated sometimes to accuracies of 1/64 of an inch must be made. The camera itself also might be called upon to move towards or away from the set-ups, or around within the 5 or 6½ field limits. Pan moves and trucks often require the services of two or three men besides the regular camera operator.

The cel and background set-ups are shot flat, with the camera mounted on a movable crane directly above. On each side of the table that holds the cels are two banks of incandescent lights, adjustable to varying degrees of intensity. The cels are held in register over the background by a set of pegs exactly like those on the animator's board. At the moment of camera exposure, a glass platen is lowered on the entire set-up and held tightly against the cels by air-pressure. This prevents any wrinkling or buckling of the cels.

As almost all Disney color cartoons are processed and printed by Technicolor, which employs a triple matrix system, they are photographed on black-and-white film by the successive frame method. Before the camera lens is a revolving disc holding three color filters, each of which are automatically positioned before the camera in the triple-exposure process of photographing each cel in a cartoon production.

In this procedure, each cel or set-up is exposed on three separate frames of film in succession — each through a different filter. The filters produce a result on the negative corresponding to that required by Technicolor for producing a full-color print with three primary color matrices. In the triple exposure procedure a blue filter registers the yellow printing values; a red filter registers the blue; and a green filter, the magenta. The three frames are exposed in that order, quickly and automatically, by the camera operator pressing a button.

This successive-frame method of animation photography has a decided advantage over the regular three-negative system used in live-action productions in that it simplifies camera operation and processing because only a single negative is required. Any ordinary black-and-white camera can be converted for this successive frame method simply by adding an automatic filter-wheel.

When completely photographed, the results are checked in the form of "color dailies"—similar to live-action "rushes." These dailies are the first color prints that are returned by the laboratory and are without sound. The layout-man, color coordinators and camera department heads view the dailies and check them for technical correctness and color balance. If okay, they are cut into their proper places in the "test reel" in place of the black-and-white animation tests and this process continues until the "test reel" represents the entire production in color.

Meanwhile, other departments are busy organizing the elements of sound and music that are to be added to the picture. The musician assigned to the production has already spent long hours composing a score, and longer hours arranging it. The timing of his musical sections is carefully checked against the final footage of the picture.

The musician works on a score on which is indicated the exact footage of all the scenes, the positions of dialog and sound-effects, and pertinent information relating to the action. He might have the picture reel on a Moviola alongside his piano to refer to. Then, with the intent and purpose of each scene in mind, he begins sketching in the music on the score sheets, working back and forth between piano and pencil as he tries out chords, runs and harmonies, struggling just as hard to get a proper feeling of suspense in a certain passage or a fresher slant on a springtime theme, as a story-man or animator does to perfect the pictured action that goes with it.

When all of these basic melodies and harmonies are sketched in, an arranger goes to work and breaks down the music for orchestration, scoring parts for the various instruments. The orchestration is then divided into "takes" of various lengths ranging from a few feet upwards to a hundred, depending upon the phrasing of the music itself. Recording the music in short sections at a time makes the job of rehearsing and recording much easier all around. These various takes can be easily cut into sync with the picture reel according to their respective measure numbers.

For the recording of music to a definite, unchanging rhythm, each musician when on the scoring stage is provided with an earphone over which he hears an intermittent high-frequency note indicating the exact tempo. In the case of a free-beat, or indefinite tempo, a "beat loop" is prepared by the cutting department.

The loop is run over and over again on a playback machine in the projection booth and "piped" through to the earphones of the musicians. They listen to the loop a few times to get used to the timing before attempting a "take." Each beat corresponds to a measure of music, and it's just a matter of following the beats along with the score.

The recorded music, like everything else along the cartoon production line, must be checked, passed upon and okayed. Retakes of music are rare, unless something goes haywire during the development of the negative.

Nearly every animated cartoon involves a number of separate sound tracks, each of which is kept separated from the rest until it comes time to coordinate, then amalgamate them in what is known as a dubbing session. This is because the cartoon sequences must be cut to fit each track precisely, and then sometimes it is decided that certain sounds, music or parts of dialog are to be dialed up or down (on the mixer by the sound man) in order to

Continued on Page 200

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ANIMATED FILM TECHNIQUES

Continued from Page 198

produce the accent or inflection desired by the director. None of this would be possible were all the sound recorded simultaneously on one sound track *before* the animation and editing phases of the cartoon had been completed and okayed.

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Photos of Artransa's key personnel are, starting at the top: John Appleton, director of sound recording; Alan Allen, chief recordist; Chris Offner, maintenance engineer, Lachlan Allman, chief projectionist.

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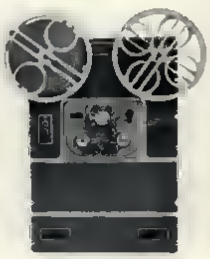

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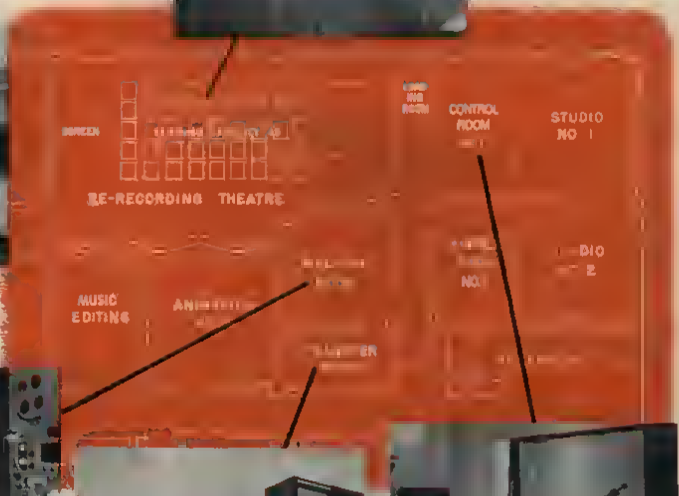

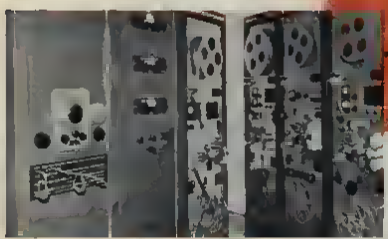

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